

Can We Keep The Skies Safe?

In an era of fierce competition, it may be difficult to maintain American aviation's remarkable record.

If you are one of the 65 percent of Americans who have no fear of flying, there are good reasons for your confidence. Flying on scheduled U.S. carriers is 30 times safer than traveling the highways by car, and the record is improving. U.S.-certified airlines carried 310 million passengers more than 3 billion miles with only 25 fatalities in 1983—fewer than the number of Americans who died from bee stings. But if you are among the minority who suffer an inevitable twinge or two whenever your feet are off the ground, you are in good company these days. Pilots, congressional watchdogs and some federal regulators share growing concerns that keeping the skies safe may prove harder in the years ahead. U.S. aviation, says National Transportation Safety Board chairman James Burnett, "is remarkably safe, unbelievably safe—but it's not safe enough."

What worries the experts is a combination of complex factors from changes in the mar-

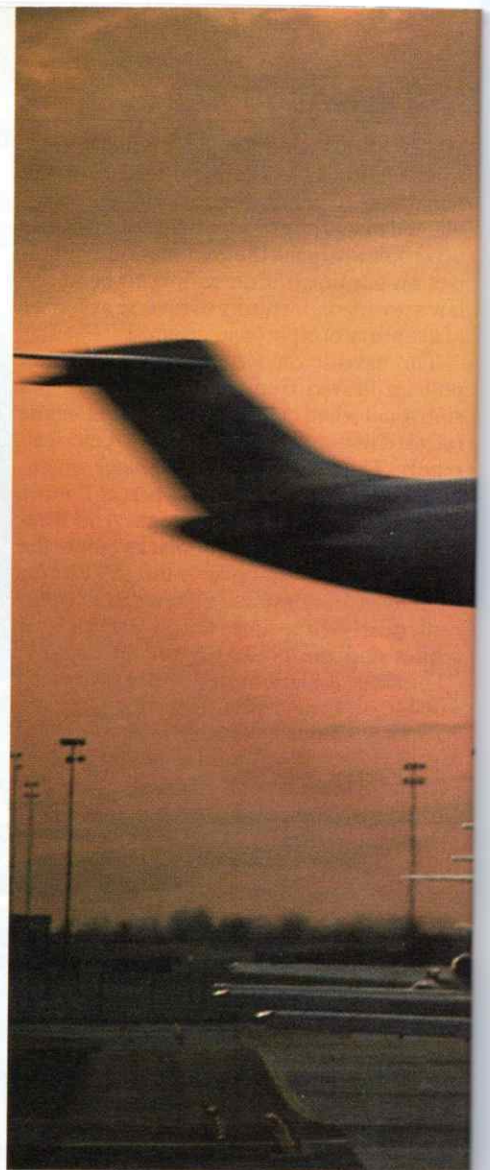
muter airlines have nearly doubled to 269. At the same time, the Federal Aviation Administration has cut its authorized force of inspectors by 23 percent since 1981—a reduction that "would give me pause even when the industry was stable," says Rep. Norman Y. Mineta, chairman of the House Public Works aviation subcommittee.

Cops: FAA chief J. Lynn Helms, who will step down this month amid questions about his business dealings, says his agency should not be viewed as "cop on the beat." But some recent incidents—including the near miss of two Pan American jumbo jets (page 31)—suggest that the system needs more policing. A special investigation of Republic Airlines after two of its jets nearly ran out of fuel last spring found "near total noncompliance... with established company fuel-planning procedures"—in part because the airline, merged from three other carriers, was following three different sets of procedures.

(According to the FAA, Republic has since made many reforms.) FAA surveillance after Global International Airways filed for bankruptcy found a host of problems that led to its grounding last month. But it took the October crash of an Air Illinois plane that killed 10 people for FAA inspectors to discover "such a paucity of records that they were unable to find out if the operation was airworthy." (Air Illinois voluntarily stopped flying on Dec. 15, and resumed jet service last week under new procedures.)

The disturbing question is why the FAA didn't discover

such problems much sooner. "One has to wonder how many more 'Air Illinoises' there are out there," says Matthew Finucane of the Aviation Consumer Action Project, a Ralph Nader group. The FAA and NTSB are both looking into that issue. And Transportation Secretary Elizabeth Dole has ordered an in-depth review of all federal transportation safety programs. "With deregulation and the technology changes that



A jet takes off from Dallas-Ft. Worth: 'With



Fred Ward—Black Star

Air-traffic controller at the screen: Glittering record

ketplace to questions about federal policy. Even though the industry is recovering from devastating losses over the past three years, high interest rates, jet-fuel prices and crippling fare wars still plague major airline companies. The result: continuing pressure to cut costs—especially in the new era of freewheeling competition. Since the Airline Deregulation Act of 1978, the number of scheduled carriers has tripled to 150; com-

are coming in our society," she says, "we want to make absolutely certain there is no compromise on the safety side."

Airlines old and new insist they are not cutting corners on safety, and that competition has only forced them to operate more efficiently. But many are applying for—and receiving—deviations from FAA rules governing safety "extras" they must carry, such as life rafts on popular Florida routes. (Each extra pound an aircraft carries adds about \$29 a year in fuel costs.) Many carriers are cutting labor costs and wages. American Airlines no longer has a mechanic do a last-minute "walk-around" its aircraft before each takeoff—a duty American insists a crew member can perform alone. Other airlines are reducing their technical, engineering and weather-monitoring departments; many new carriers don't have them. Last fall, for the first time, the Association of Flight Attendants negotiated a safety section into its contracts to protect against cuts in evacuation training and other safety programs. "Hands-on training," says the union's Janis Saito Baumgarner, "has given way to training by book and by rote."



Herman J. Kokojan—Black Star

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Hardest hit by salary cuts, pilots—not surprisingly—are most vocal in their concerns. “You have to be naive to believe that airlines cut only frills,” says one veteran captain. “Carriers have always exceeded FAA regulations—but today I see an insidious trend.” Earlier this month the Air Line Pilots Association blasted Continental Airlines—struck since October by pilots, flight attendants and other union workers—for flying one damaged 727 for three days before mechanics for another airline noticed its cracked fuselage. “We feel this is not an isolated case, but part of a pattern of safety deficiencies,” ALPA president Henry Dufy wrote the NTSB, urging an investigation. (Continental, which ferried the aircraft to Los Angeles with a reinforcing strap around its fuselage, insists that the damage was not great and is cooperating in the NTSB probe.)

Fighting the System

The debate over air safety under deregulation has also renewed concerns about the FAA itself that are as basic as the agency's dual mandate to both promote the aviation industry and regulate safety. Those func-

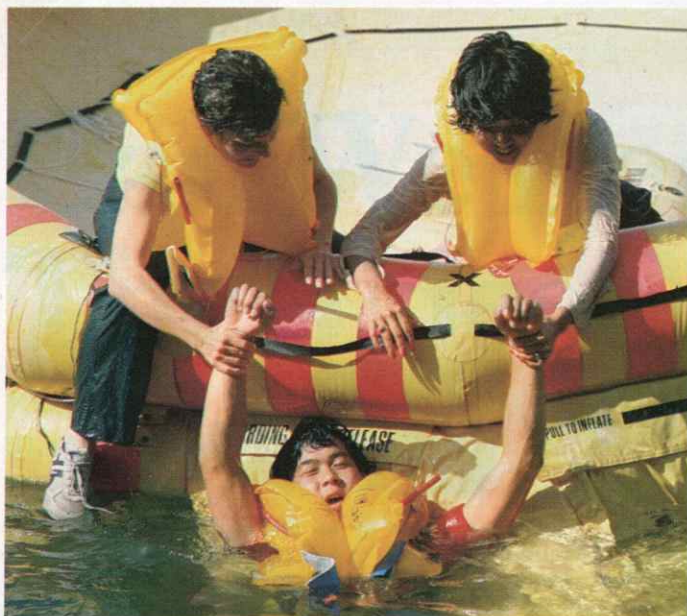
tions “are absolutely at loggerheads,” says San Francisco aviation lawyer Gerald Sterns. As a result, “there's no one who will tell it like it is, with no special interest to serve,” says John Galipault, who set up the Aviation Safety Institute to log anonymous complaints.

Critics say the agency's desire to protect the troubled industry from costly changes helps account for its glacial slowness in mandating safety changes, and its tendency to set only minimum safety standards. Getting the FAA to take action is “like trying to push Jell-O up a mountain,” says Rep. Elliott Levitas, chairman of a House subcommittee that has sparred with the FAA for years. After an outside consultant placed the value of a human life at \$430,000 in 1979 dollars, the FAA started considering a ruling that maintaining crash-fire trucks at small airports is not cost-effective. “In the old days the FAA used to say, ‘If it saves one life, it's worth it,’” says Wayne Williams, founder of The National Transportation Safety Association, a watchdog group. “I haven't heard that phrase in a long, long time.”

Federal aviation officials point to the glit-

tering safety record as evidence that the system is working. They also say that \$14 billion in major technological changes in the next decade will make the skies even safer. “Aviation is an economic operation,” concedes NTSB's Burnett. “If we drive the price of a ticket to where people have to drive instead of fly, we'll kill more people than even a sloppy aviation operation would.” A NEWSWEEK Poll found that 29 percent of Americans do choose airlines chiefly on price (page 28). But 74 percent said they would support higher fares to pay for the cost of extra safety features. The poll also found that public confidence in federal agencies to maintain air safety ranked last—after pilots, controllers, mechanics and the airlines themselves.

Chief among the concerns is the FAA's vast mandate and limited manpower. “It's just impossible for the FAA to have the kind of control over airlines the public assumes,” says San Francisco aviation lawyer and former pilot Thomas Smith. The agency's San Francisco Air Carrier District Office, for example, is nominally responsible for monitoring the operations of 31 domestic and



Susan Greenwood—Gamma-Liaison



Herman J. Kokojan—Black Star

Flight attendants practice evacuation techniques, airline mechanics at work: 'There's no one who will tell it like it is'

foreign airlines at 10 airports (including 2,500 crew members); 5,100 maintenance personnel at 20 maintenance bases, 19 training centers and 54 refueling facilities—all with a staff of 30, down from 41 three years ago. The FAA delegates much of the design-testing and certification of aircraft to manufacturers (although it has just reorganized its certification structure to bring more expertise to bear) and it relies on airlines to monitor maintenance and pilot performance. Under a new program to increase the FAA's efficiency, some specially trained airline personnel are also certifying their own pilots on specific types of aircraft.

Honor: FAA officials say that airline employees are tougher on their colleagues than FAA inspectors are. But critics argue that the informal honor system has always posed the potential for conflict of interest and that it may no longer be appropriate, given the pressures to cut costs. The FAA report on Republic found that one of the airline's chief problems was the failure of company inspectors "to ensure that the highest professional standards are adhered to." When questioned about one unauthorized landing procedure, the report said, "three pilots stated that [inspectors] would 'raise hell' due to excessive fuel consumption" if they used a standard approach.

The FAA does do spot checks of maintenance, pilots and flight logs, but it relies on airlines to report problems and accidents. FAA field inspectors say the rules for what must be reported are at once too specific and too vague. Airlines must report fires and emergency landings, for example, and the failure of two or more en-

gines—but not always the shutdown of one. As a result, though Eastern Airlines had experienced problems with oil gaskets called O-rings nearly a dozen times before they caused a near-ditching of an L-1011 in the Atlantic last May, there were only two reports of O-ring problems in FAA files—neither involving Eastern. "How can we determine if there's an operational problem if we don't have any reports?" laments James Vaughan at the FAA's record center in Oklahoma City. Some FAA officials were aware of the problem, and Eastern had posted a warning in its Miami airport center. But the mechanics who serviced the plane said no one had brought it to their attention.

The FAA's coming Aviation Safety Analysis System—including minicomputers that will link field offices with the central FAA data banks in Oklahoma City—is aimed at helping agency inspectors spot such trends faster. But critics say that even when the agency perceives potential problems, it does not always take proper

steps. At a hearing on the Eastern O-ring incident in Miami, Burnett asked FAA personnel what they were doing to prevent the problem from reoccurring. "The answer I kept getting was, 'We talked to the vice presidents about this,'" Burnett says. "Finally, I said, 'Well, vice presidents don't put on O-rings!'"

Stall: The FAA is sometimes accused of setting rules "over dead bodies." But even when safety hazards have caused major tragedies, the FAA seems to respond slowly. The 1979 crash of an American Airlines DC-10 in Chicago that killed 275 people—the worst crash in U.S. history—is a case in point. The NTSB attributed the jet's fatal stall in part to wing slats that retracted when the left engine tore off the plane. But it took a similar incident on an Air Florida DC-10 in 1982 before the FAA officially required a change in the wing-slat controls.* The engine tore off, the NTSB found, because its mounting was damaged by an improper maintenance procedure—a problem Continental had encountered earlier but had not reported to the FAA. FAA officials still have not adopted the NTSB's recommendation for stricter monitoring of such problems, arguing that the coming automated reporting

New traffic-control equipment: A massive modernization program

Roger Tully—Black Star



*In a rare interview, DC-10 project leader William Gross told NEWSWEEK that McDonnell Douglas engineers never tested the aircraft for the effects of an engine's falling off because they considered that probability to be about one in a billion. Building in safeguards beyond that point would be "like trying to fly the Brooklyn Bridge," says Gross. "You could put enough redundancy in an airplane that it could never get off the ground." Some critics—including John Galipault—say the aircraft still has design defects, and American Airlines is voluntarily spending \$6 million to reposition hydraulic-control lines on 34 of its DC-10s. Gross insists that any problems on the aircraft now have been eliminated. "The DC-10," he says, "is the only airplane that has been certified twice."

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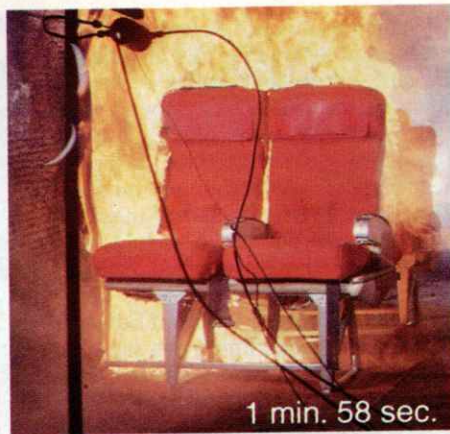
system will address that need. "The fact remains that if it occurred today, an airline would still not have to report significant structural damage induced during maintenance," says safety-board chief Burnett.

Putting Out the Fires

One of the most persistent struggles between the FAA, the NTSB, pilots and Congress centers on the "survivability" of aircraft, particularly the flammability of interiors that quickly turns even minor fires into disastrous infernos, leaving passengers just moments to escape. About 1 in 5 passengers killed in U.S. plane crashes dies in a postcrash fire—480 between 1965 and 1979, according to the NTSB. The problem was illustrated dramatically in 1980, when a Saudi Arabian Airlines L-1011 landed safely in Riyadh after a fire broke out in the cargo hold. But before the doors could be opened, all 301 people aboard had died from a combination of flames and toxic fumes.

The FAA banned smoking in aircraft restrooms after a 1973 fire in a lavatory wastebasket killed 124 passengers on board a Brazilian airliner, and, on their own, some airlines and aircraft makers have gone further; one Texas commuter airline has banned smoking altogether. But it was only after 23 passengers were killed in a burning Air Canada DC-9 on a Cincinnati runway last June—and another round of angry congressional hearings—that the FAA proposed rules to combat the fire problem, chief among them a requirement for flame-retardant linings on airline seat cushions. FAA officials insist the changes were in the works long before the Air Canada tragedy—and that the materials were undergoing needed research. (One prototype fire-blocking fabric lost its properties in 60 to 90 days; some would have added three pounds of weight per seat—costing the airlines hundreds of millions of dollars in extra fuel.) But the new rules—if approved—would not mandate the flame-retardant cushions for three years, since airlines will be allowed to install them as part of routine refurbishing.

Smoke Hoods: Proposed regulations also call for two Halon fire extinguishers in each cabin and low-level lights to help passengers find exits in smoke and darkness. Experts say such measures are long overdue: the NTSB began recommending floor-level exit lights 10 years ago, for example, and scientists at the FAA's Civil Aero-Medical Institute (CAMI) in Oklahoma City demonstrated in the 1970s that such lighting could save 20 percent of postcrash fatalities. The FAA plans soon to propose requiring smoke detectors in aircraft lavatories and galleys, and it hopes to have new flammability standards for rug, wall and ceiling materials by the end of the year, along with additives to render aircraft fuel supplies less prone to explosion. Still, aviation-safety experts believe there is more the agency could do. Sixteen years ago, for example, CAMI



Photos courtesy F.A.A.

developed a transparent smoke hood for passengers, but industry and ALPA rejected the \$4 items, arguing that they might slow down evacuations. Some scientists are pushing updated models, complete with portable air supplies.

The proposed fire-blocking cushions will delay the spread of flames by about a minute and simultaneously cut some toxic fumes. Other than to delay the onset of fire, researchers say, little can be done to combat the deadly toxics problem. CAMI manager J. Robert Dille says that a man's wool suit, when burned, gives off enough cyanide to kill seven people; cotton emits carbon monoxide. Fumes from a shipment of pantyhose burning in the cargo hold helped account for the heavy loss of life in the 1972 crash of a United 737 in Chicago. To be completely safe, says Dille, "you'd have to fly in a stainless-steel seat—nude—with your baggage coming behind you in another airplane." (And then, says Ken Hurley, a chief Boeing engineer, the plane would be so heavy it might not get off the ground.)

'Carry Your Own Life Raft'

Another area of chronic concern in "survivable" plane crashes is the adequacy of flotation cushions, life vests and rafts. Although 70 percent of all U.S. airline flights land or take off over water, only 25 percent—those that travel more than 50 miles offshore—are required to carry life vests, and the FAA is allowing some airlines to fly as far as 180 miles out to sea without rafts. FAA officials say flotation cushions provide adequate protection in the event of a water crash closer to shore. But Wayne Williams, a former safety-equipment engineer and retired commander of the U.S. Air Force Sea Survival School, says the cushions are difficult for children, elderly and injured persons to hold onto, and that due to the paralyzing effects of hypothermia, even healthy adults quickly become incapable of clutching them in cool water. And while the exit slides on many aircraft can be used as flotation devices, Williams says they sink with the plane if not jerked loose before the cabin doors are opened—a tricky procedure many flight attendants are not trained to perform.

Life vests also pose difficulties, says Williams, who started his campaign under the slogan "Carry Your Own Life Raft" and founded his 350-member National Transportation Safety Association out of frustration with the FAA. There are currently five different life-vest models in use—mostly of the World War II "Mae West" variety—and it is not uncommon to find more than one model on a single plane. Many models are difficult to put on quickly. In 1978, when a National Airlines 727 crashed in Escambia Bay near Pensacola, Fla., only 2

Test of seat flammability at an FAA center in New Jersey: Within seconds, a fire lit at the door of a simulated fuselage ignites a seat—and begins to spread

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of 58 passengers got their vests on correctly, Williams says. (Twenty-four people, including some crew members, reportedly took their seats with them in the belief that they were flotation cushions. They weren't. Fortunately, the plane came to rest on a sandbar and all but three passengers survived.) Williams says that most FAA-approved vests don't provide adequate protection against waves; the V-neck models channel water toward an unconscious person's face. "In my opinion, the life jacket actually kills people," wrote Dr. T. Owen Randall, who watched his wife drown in the Caribbean after struggling for five hours in her FAA-approved life vest.

Tests: The FAA is requiring all life vests manufactured after 1985 to meet a higher-buoyancy standard and be capable of being donned in 15 seconds. (Airlines will be allowed to use the old models until they wear out.) Even then, Williams contends that manufacturers need only *tell* the FAA that their vests satisfy the 15-second requirement and he says that their tests do not approximate the confusion of actual emergency situations; partly in response to his criticisms, the FAA has directed its regional offices to report to Washington about procedures manufacturers use to meet the standards, and the agency itself plans to buy an assortment of vests for tests of its own. Meanwhile, Williams and ALPA continue to press for a federal law that would require a standardized high-buoyancy life vest for every seat in every U.S. aircraft. "We feel that tragedy in the water is absolutely inevitable," Williams told a congressional panel last fall.

To further enhance aircraft survivability, the FAA is considering new criteria for seat designs, seat belts and other cabin components. A 1981 NTSB report found that seats and restraint systems broke loose in 84.4 percent of 77 "survivable" crashes; overhead panels, racks and storage bins failed in 78 percent. FAA officials say their data on such issues are outmoded; in July they plan to crash a remote-controlled jet equipped with dummies, prototype seats and hundreds of monitoring devices at Edwards Air Force base. Meanwhile, pilots say shoulder harnesses would be more effective than seat belts and that passengers would be safer still if seats faced backward, so that they would be thrown into their seats, instead of out of them, on impact. But most regulators feel passengers would object to such measures. "Public perception of safety governs a lot," says ALPA safety director John O'Brien.

Passengers are also part of the problem. Experts say the growing volume of carry-on baggage complicates estimates for fuel requirements. Flight attendants note that carry-on items clutter aisles, block escape routes and distract passengers in emergency situations. Studying a film of the recent evacuation of an Air Florida jet in Miami, Paul Rasmussen, CAMI's supervisor of emergency-evacuation research, was appalled to see some passengers carrying out duffel bags, coats and duty-free liquor; leaving the burning Air Canada flight, one man stopped to get his camera. "Passengers abdicate responsibility for their own safety when they board an airplane," Rasmussen says. There are simple measures passengers can take to improve their chances for survival in the rare event of a plane crash. Among them:



- Listen carefully to the preflight briefing. Notice whether your seat cushions are flotation devices. Notice where the exit doors and windows are, and count the rows of seats to the nearest one—you may not be able to see clearly in an emergency. "I study the doors to see how they open—they're all different, and they're not that easy to operate," says Karen Anderson, one of only 68 passengers who survived the collision of two 747s on a runway in the Canary Islands in 1977; 581 others, including her husband, did not.

- Should you have to evacuate, leave quickly and forget carry-on baggage.

- In the event of fire, stay low. Smoke and toxic fumes rise to the ceiling.

- Fasten your seat belt snugly. Passengers who "catch up" to loose seat belts risk more internal injuries on impact. If you travel with infants or small children, ask whether the airline allows you to use your own car seat.

- If you drink, do so in moderation. CAMI found that three victims in the Air Canada fire were legally drunk, which may have impaired their ability to evacuate.

Killer Wind Shears

One area where passengers have little control is the weather. An especially nettlesome problem has been wind shear—in simplest terms, a sharp change in wind speed and direction over a short distance. Wind shears are particularly dangerous when they occur near ground level and in "microbursts"—a strong head wind followed by a sudden downdraft that can reduce the air flow over airfoils so that they stall in midair. The 1982 crash of a Pan Am 727 near New Orleans that killed 153 people focused new attention

A NEWSWEEK POLL: THE PASSENGER'S VIEW

Most of those surveyed say they are not afraid of flying. Even so, a majority would favor stricter rules on flights in bad weather, and half would pay higher fares for improvements in safety.

The last time you booked a reservation on a commercial airliner, what was the most important factor in deciding which airline to fly on?

Price	29%
Convenient schedule	20%
It was the only one that flew to my destination	14%
Reputation for safety	6%

When you fly, how often are you frightened?

Always	11%
Most of the time	3%
Sometimes	21%
Never	65%

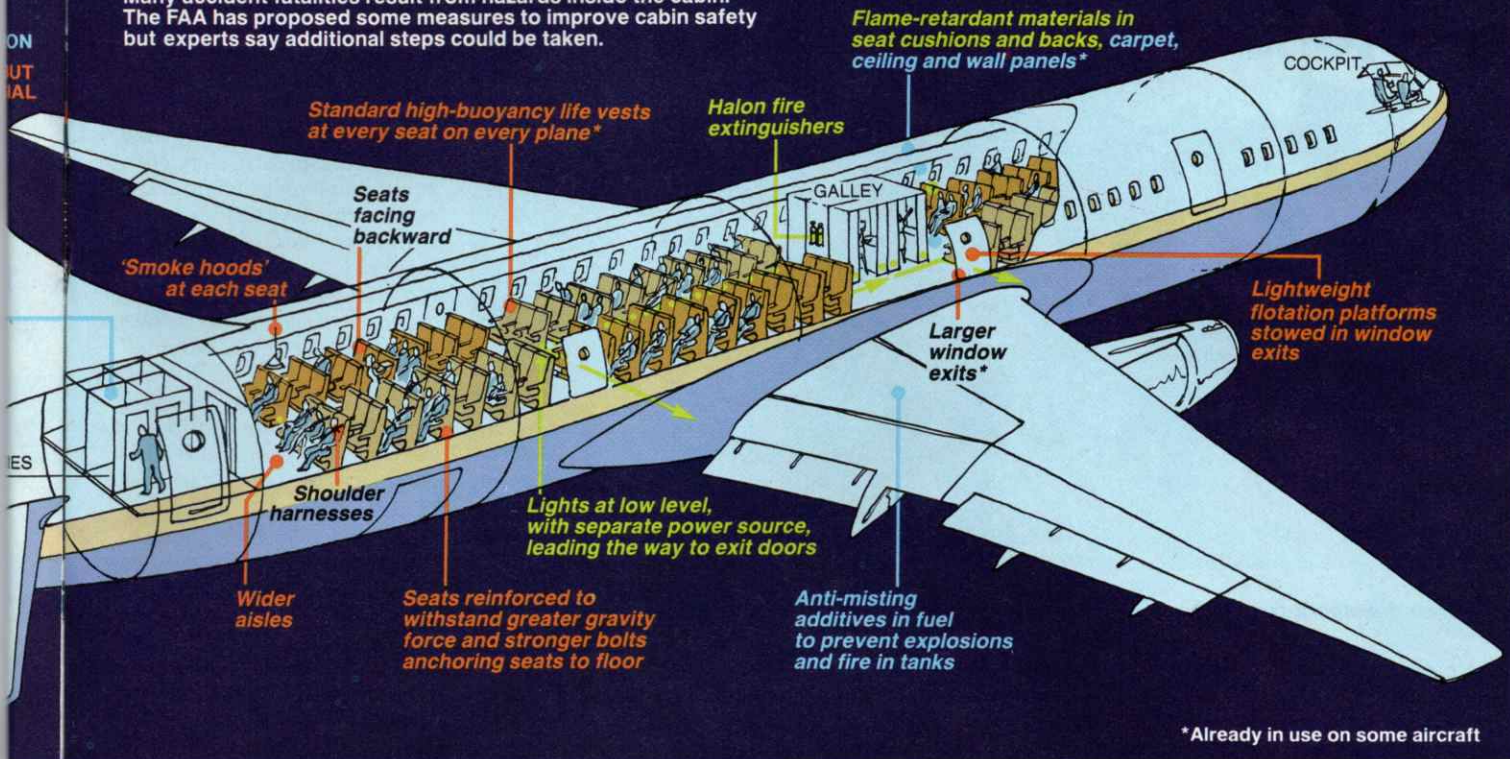
For the sake of greater air safety, which of the following measures would you favor or oppose?

	Definitely favor	Probably favor	Oppose	Don't know
A ban on smoking in flight to reduce possibility of fire	58%	16%	25%	1%
A ban on alcohol in flight to increase passengers' ability to evacuate	42%	23%	32%	3%
More extensive safety instructions—even if it adds to flight time	72%	16%	10%	2%
Higher fares to pay for safety improvements	50%	24%	23%	3%
Strict weight limits for carry-on baggage	62%	23%	11%	4%
Stricter regulations to delay or even cancel flights in bad weather	83%	10%	5%	2%

For this NEWSWEEK Poll The Gallup Organization interviewed 1,023 adults by telephone between Dec. 9 and Dec. 20, 1983. The margin of error is plus or minus 4 percentage points. The NEWSWEEK Poll © 1984 by NEWSWEEK, Inc.

DESIGNING A SAFER AIRPLANE

Many accident fatalities result from hazards inside the cabin. The FAA has proposed some measures to improve cabin safety but experts say additional steps could be taken.



*Already in use on some aircraft

Ib Ohlsson—NEWSWEEK

on the problem. But a National Academy of Sciences study listed 27 wind-shear incidents or accidents between 1964 and 1982 that killed a total of 491 people. There have been other close calls. Last August Air Force One landed at Andrews Air Force base with Ronald Reagan on board just six minutes before what the FAA's Neal Blake called a "killer" shear hit the field.

JAWS: Scientists are just beginning to understand the phenomenon clearly. After three years of a five-year, \$1.9 million project called JAWS—for Joint Airport Weather Study—the NAS recently issued a host of recommendations, including more sophisticated simulator training. The FAA has advised pilots to trade airspeed for altitude to ride out the treacherous downdrafts, but JAWS's John D. McCarthy says pilots need to realize there are some wind shears they cannot surmount. "There are a lot of senior captains out there who say, 'I can fly through any wind shear—just use power.' That's wrong," he says. Airlines routinely halt operations in particularly bad weather, but the "go" decision at other times is up to pilots, who face pressures to stick to schedules. McCarthy says passengers should make it clear to airlines "that safety is more important than a time schedule."

To spot killer shears, JAWS experts say better means of detection are needed. The Low Level Wind Shear Alert Systems currently in place at 59 U.S. airports (including New Orleans) cannot detect the smallest microbursts and occasionally flash false warnings, causing some controllers and pilots to ignore them. Doppler radar that can show wind-speed changes on a screen in

picture form is far better, but it is in experimental use at only a few airports. On-board radar monitoring of ground speed versus airspeed would be better still, experts say, but that is still beyond the state of the art.

In the meantime, the FAA plans to equip more airports with Doppler radar systems in coming years, and it is installing the current wind-shear-alert systems at 51 more airports. The agency is also working with the National Weather Service to design a data-link system that will coordinate up-to-the-minute information from NEXRAD radar and other systems and transmit it to pilots via computers. Disseminating that data seems to be crucial. Levitas notes that about 40 percent of aviation accidents involve weather, and "in every instance," he says, "somebody knew about the problem—but not the pilot." The FAA recently set up a Hazardous Inflight Weather Advisory System in parts of the Southeast to give pilots up-to-the-minute reports about conditions. But an Air Canada pilot whose jet dropped 1,000 feet in upper-air turbulence off the coast of South Carolina in November, injuring 29 passengers, said he was not aware the information was available. Levitas reports that when 116 pilots who routinely fly into the region were questioned, none knew about the system—even though information about it had been published in the FAA's Airmen's Information Manual.

The Human Factor

Such communication failures may help explain why 65 percent of all accidents are attributed to pilot error. But many pilots dispute those figures. "I've yet to find a guy

who goes out to kill himself—but the industry is always on top of us, saying, 'We can do it cheaper, we can go without this,'" says senior pilot Hellmut Hetz. "If they blame the problem on pilot error, they don't have to make any changes," agrees United pilot Gary Babcock. NTSB, however, is looking to make changes in "human performance" (a term it now prefers to "pilot error"), and it has recruited a team of behavioral scientists to help study the issue. "We're going to start finding out *why* rather than just *what*," says Ronald L. Schleede, who heads NTSB's new Human Performance Division.

Fatigue: ALPA and NASA's Ames Research Center are also studying factors that affect pilot performance. A key concern is fatigue. Though pilot hours in the cockpit seem short (100 flying hours per month maximum on regularly scheduled carriers), pilots say actual time on the job tends to be higher, especially on international layovers, and other experts agree that frequent time-zone crossings, light changes and air speeds over 450 mph play havoc with the human body. "You are hungry at the wrong time and wide awake when you should be sleeping," says Delta pilot and psychologist C. W. Connor. After particularly long stints in the cockpit, some pilots say they are too tired to drive home from the airport—and they fear for their colleagues on nonunion carriers. "If I tell my boss I'm too tired to fly, that's the end of the discussion. I find a hotel," says one veteran captain. "At a little charter, if the boss says, 'Go or get fired,' you go."

Another area of human research centers on the relationship between pilots and copilots, who are, after all, another redundant



Herman J. Kokojan—Black Star

Passengers disembark from a Texas commuter airline: The number of scheduled carriers has tripled

feature of the aircraft. The cockpit voice recorder aboard the Air Florida 737 that crashed into the Potomac in 1982 revealed that the copilot four times expressed concern about snow and instrument readings; his warnings were not heeded. Since 1982, United Air Lines has been urging copilots and flight engineers to voice concerns more forcefully and captains to listen. "There's been quite a change in the cockpit," says United vice president Mel Volz, "with old 'iron butts' now asking for opinions."

The Next Generation

Still evolving is the way flight crews handle their equipment—particularly on the new generation of highly computerized jets. Boeing's 757 and 767, for example, are equipped with 130 microprocessors that control everything from flight paths to cabin temperatures. Six cathode-ray tubes—like small TV screens—have replaced many of the cockpit's old gauges and dials; two of the screens have replaced the flight engineer, who is still "standard equipment" on older wide-bodies. Pilots—whom some Boeing designers now refer to as "flight managers"—are still necessary, but their jobs involve much less hands-on flying and much more monitoring of sophisticated information systems.

Most pilots welcome automation; among other things, modern computers have made it possible to simulate all sorts of complex situations an air crew might not otherwise experience in a lifetime of flying.

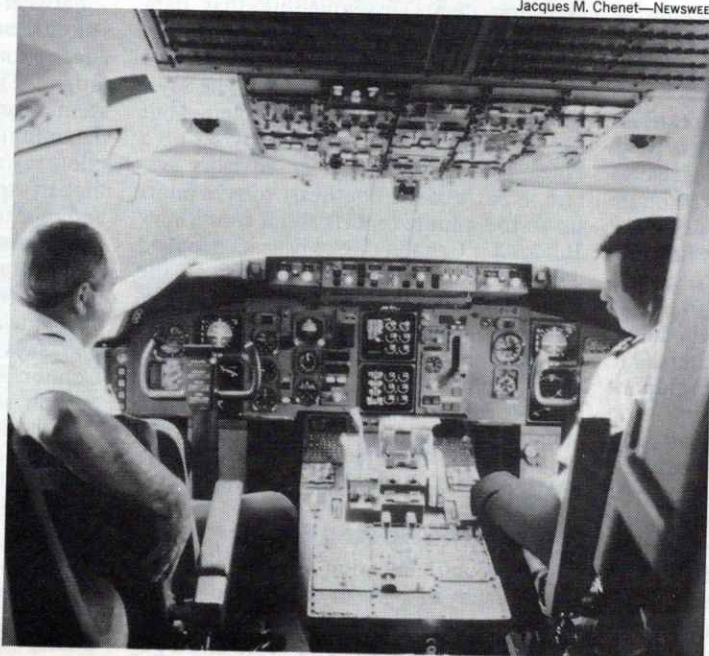
But others worry that it is turning them into "idiot-light watchers" who may be too complacent to respond in emergencies—a phenomenon Delta's Connor calls "psycho-physiological atrophy." Others fear that increasing computerization will not eliminate pilot error, only relocate it. Experts at the International Civil Aviation Organization in Montreal now believe that a single-digit coordinate error punched into KAL Flight 007's sophisticated navigational system may have caused it to stray hundreds of miles off course. Still other pilots are suspicious of their ability to override computer controls when necessary. "Turn it off" ought to be part of the new technology," says John Lauber of NASA, which has

airplane." Though ALPA thinks none of the more than 400 U.S. airports its members use is "unsafe," safety director O'Brien says "some airports provide a higher margin of safety than others." Los Angeles International is the only U.S. airport on the "black star" list of the International Federation of Air Line Pilots Associations; noise restrictions require planes landing after midnight to make an over-water approach that is often downwind and against departing traffic. The rules, pilots say, caused one nonfatal accident in 1974. "If we'd spilled blood," says ALPA's local safety representative, H. Ray Lahr, a United pilot, "we would have changed the procedure right then."

NTSB is studying conditions at 14 major U.S. airports, and Burnett says the board has found "substantial variations" in the way some airports comply with FAA regulations—including different "philosophical approaches" to closing runways in bad weather. F. Russell Hoyt of the American Association of Airport Executives counters that widely varying local conditions make ice and snow control "more a seat-of-the-pants operation . . . than a scientific exercise." Anchorage's airport, meanwhile, is developing a reputation for danger because aircraft sometimes get lost in its dense fog. Last month a 747 cargo jet landed on a maintenance truck on a fog-blanketed runway, seriously injuring the truck driver. Four days later a DC-10 freighter smashed into a commuter plane, destroying both aircraft. Lately the Anchorage tower has routinely dispatched

Cockpit of a Boeing 757: 'Flight managers' and 'idiot lights'

Jacques M. Chenet—NEWSWEEK



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fire trucks to find out what happened to aircraft that seemed to disappear in the fog after landing. Airport and NTSB officials have long urged the FAA to install ground radar. "We've had two empty airliners so far," says James Michelangelo, chief of the NTSB's Anchorage office. "The next one isn't going to be empty."

In the wake of those incidents—and a fatal ground collision in Sioux Falls, S.D., last month—the FAA has ordered a nationwide review of ground-traffic-control procedures. To minimize the risks of midair collisions, airlines will be fitted in coming years with in-flight Traffic Alert and Collision Avoidance Systems that will alert crews to the position, range and relative bearing of other aircraft in their vicinity. As part of the \$14 billion National Airspace Plan coming on line in the next decade, computers on the ground will be able to develop conflict-free flight paths. Data will be passed to aircraft in digital streams, cutting down on distracting conversations, and a new Microwave Landing System will enable aircraft to make curved approaches to runways, helping pilots navigate around difficult terrain or noise-abatement restrictions.

Challenge: Experts inside the FAA and out applaud the FAA's technological modernization program—one of the largest non-military projects the government has ever undertaken. They also warn that Helms's successor faces a formidable challenge in coordinating the complex changes and ensuring the necessary funding. The new FAA chief will doubtless face pressure from Congress to restore the cutbacks in agency inspectors and to step up vigilance over the changing industry. "If [the FAA] does not have the right basic enforcement strategy," says Burnett, "the amount of resources [Congress] gives it may be of very secondary importance."

U.S. air travel has been so remarkably safe largely because airlines, aircraft manufacturers and others in the aviation community have traditionally far exceeded FAA standards. "After all, what we're here for is to save lives," says Gary Rice, director of the Asheville, N.C. airport, who will continue to fund crash-rescue trucks even if the FAA decides they are not cost-effective. The FAA, in fact, *assumes* its regulatees will go beyond its safety regulations. "Those who just barely meet the minimum standards don't stay in business very long," says Kenneth S. Hunt, FAA director of flight operations. That may be too much to ask in an era of competition and cost pressures. To keep U.S. aviation as safe as it has been, as Representative Mineta says, "we're going to have to have the kind of firm safety regulation and enforcement that make the cost of safe operations something no airline can avoid."

MELINDA BECK with RICHARD SANDZA in San Francisco, WILLIAM J. COOK and MARY HAGER in Washington, HOLLY MORRIS in Atlanta, SHAWN DOHERTY in New York and MADLYN RESENER in Chicago

The Controllers' Heavy Burden

The voice—professional, controlled and unmistakable in its laconic fury—cracked in their headphones around 4 p.m. on New Year's Day. "I just had a near miss at three-seven-oh, say again, we just had a near miss." It was the pilot of a Pan American Airways DC-10; his listeners were two stunned air-traffic controllers at the Federal Aviation Administration's in-flight traffic center in Miami. As it turned out, the Pan Am pilot was reporting a terrifying blunder by FAA ground control—a near collision between two Pan Am jumbo jets high over the Atlantic about 200 miles east of Miami. The DC-10 was en route to St. Martin from New York; the 747 was flying to Miami from London. Somehow controllers assigned both flights to the same

more automated future—and Congress has already approved an ambitious \$11 billion to \$14 billion plan to bring state-of-the-art technology into the entire air-traffic-control system. The coming innovations in air-traffic control will be installed over the next decade—and the new gadgetry, from a supersophisticated new landing-guidance system to computerized collision-avoidance warnings for pilots, will enhance airline safety.

Untested: But as the volume of U.S. air traffic has crept back to prestrike levels, concern for the integrity of the FAA's air-traffic-control system has increased. The overriding reason is obvious: more than half of the FAA's controllers have been on the job for less than three years, and their ability to handle a crisis in the

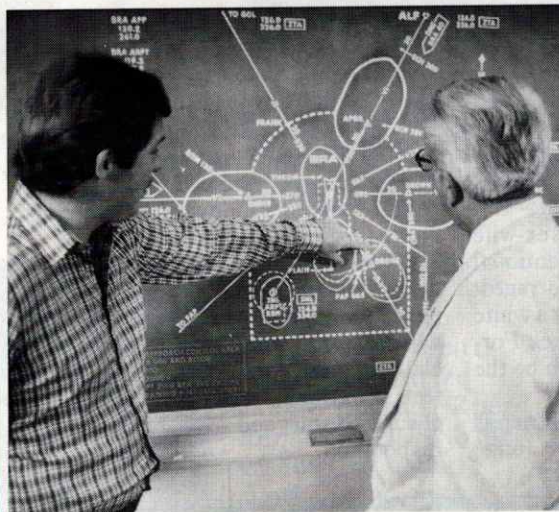
crowded skies is, to say the least, untested. Helms and his managers insist that the new controllers' training and supervision have been adequate, that the FAA is working hard to cure the kind of endemic morale problems that led to the PATCO strike and that occupational stress is not the problem that some outsiders think. Beyond all that is a reassuring statistical trend: compared with the three years before the strike, the number of reported controller errors has actually *decreased*, from about 500 a year to around 300 a year.

Still, some critics of the FAA—and some of the controllers themselves—remain unmollified. They point out that the

FAA's "flow control" restrictions on flights to and from major airports have largely prevented the kinds of complex handling problems that led to controller errors before the strike; as slot restrictions are lifted (only four airports, in New York, Chicago, Denver and Los Angeles, still have them), the burden on the rookies in the towers will increase. Morale—sky-high in the crisis months after the strike—is drooping, the FAA has no system for monitoring controller stress and some say that controller errors have been significantly—and perhaps deliberately—underreported.

Does that mean that the nation's air-traffic-control system is heading for a breakdown or that flying is less safe than before? Probably not. But as every air-traffic controller knows, disaster can be only a split second's inattention away.

TOM MORGANTHAU with bureau reports



James D. Wilson—NEWSWEEK

FAA training school: More traffic, less experience

altitude, 37,000 feet, and by ghastly coincidence they had arrived at the same point at almost the same moment.

Controller errors are rare—and it is to the great credit of the FAA that the number of commercial airline disasters attributable to controller error in the past 2½ years is exactly zero. During that time the nation's civilian air-traffic-control system has been convulsed by the illegal and self-destroying PATCO strike, and it has been rebuilt, almost from the ground up, with about 8,000 newly trained personnel. Outgoing FAA chief J. Lynn Helms takes pride in the achievement, and he is entitled to do so: more than a few experts doubted the agency's ability to keep America's skies safe. "We're handling more traffic, providing more services, vastly improving safety and doing it with 9,000 less [controller] positions," Helms says.

Helms is pushing the FAA toward a