World

January 1981
Volume 11 Number 1

U.S. Department
of Transportation

**Federal Aviation
Administration**

Research Highlights

The FAA Technical Center is operating the most advanced operational and research heliport in the world to improve all-weather helicopter flight and provide data for establishing IFR heliport standards.

Built last year and slated for completion of tests by mid-1982, the heliport is being used to develop criteria for non-precision approach and landing procedures using the Basic Wide Microwave Landing System—250-foot ceiling and half-mile visibility—and precision approaches using the Small Community MLS—90-foot ceiling and half-mile visibility. The MLS antennas being used are near an adjacent runway, but if the antennas were near the landing pad, the decision height could be lowered to 12 feet.

Initially, the project is seeking to find the optimum lighting and navigation systems for use in low-visibility situations. The heliport is equipped with precision approach path indicators (PAPI), approach lighting, pad lighting, standard pad markings and low-power laser visual approach slope indicators (VASI).

The cover: Boeing technicians move a wing section into place on a 767 mockup used for studying the design. FAA monitors the process as part of type certification.

Boeing Company photo

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Secretary of Transportation
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John G. Leyden

Editor
Leonard Samuels

Art Director
Eleanor M. Maginnis

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:

Mark Weaver—Aeronautical Center
Clifford Cernick—Alaskan Region
Joseph Frets—Central Region
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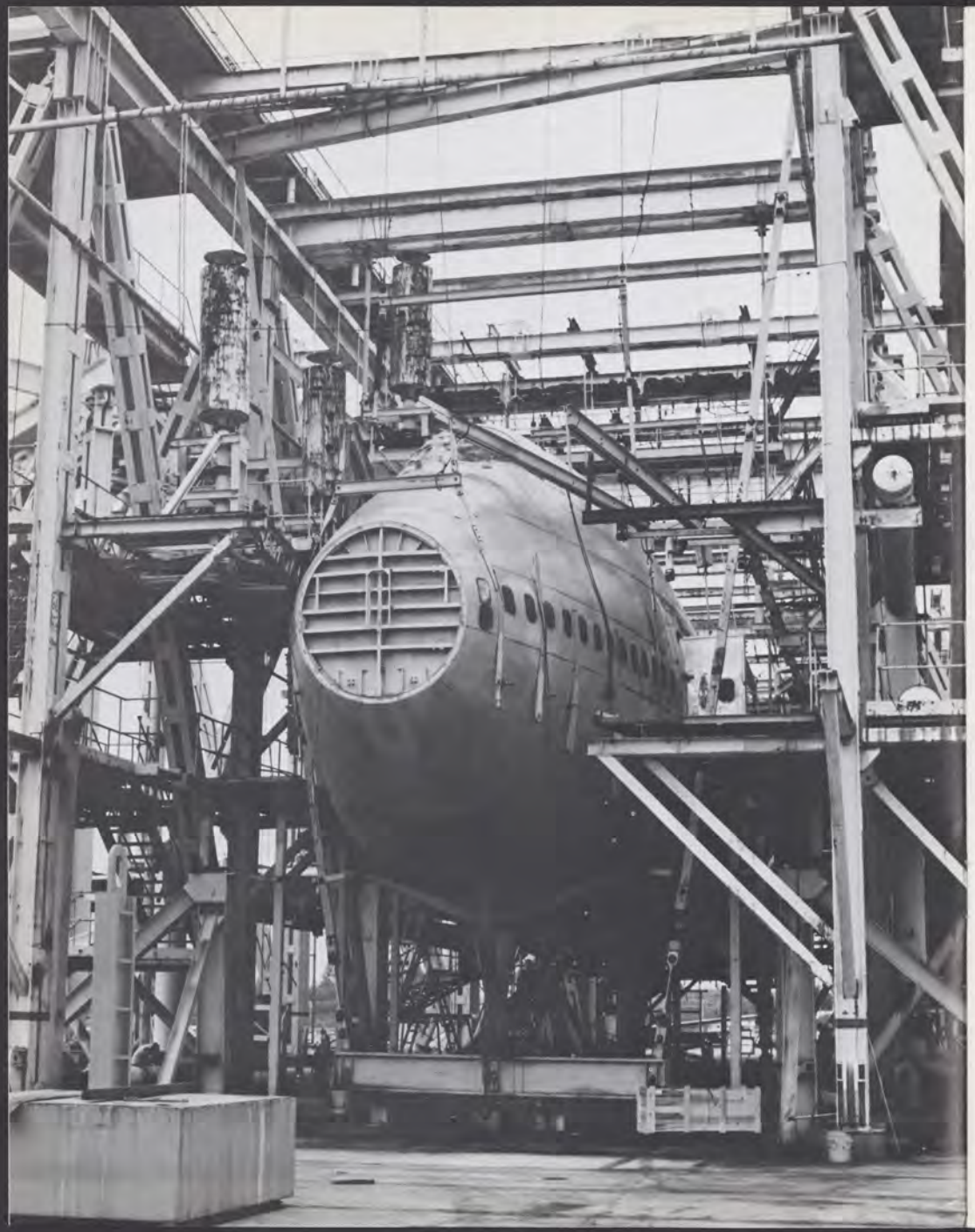


A Boeing 747 undergoes stress testing.

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

The FAA Stamp of Approval

How the Agency Ensures Safe Aircraft

When the Boeing 767 goes into airline service late in 1982, it will carry with it what amounts to a warranty from the Federal Aviation adminstration that the aircraft is as safe as man and the state-of-the-art can make it.

That warranty, which will be over and above any warranty offered by the manufacturer, will be embodied in the Type Certificate the FAA will have to issue before the aircraft can go into passenger service.

The Type Certificate will serve notice that the 767—a quiet and fuel-efficient twin-engine, wide-body airplane that will be the first of the fourth generation of jet transports—meets all of the FAA's standards for safety and reliability.

It will be issued only after the most thorough testing and evaluation program a new type of aircraft has ever undergone, a job to which the FAA will devote up to 50,000 hours of work.

The certification will be the responsibility of the FAA's Northwest Region. Charles R. Foster, the director of the region and former Associate Administrator for Aviation Standards, said that the certification of the 767 and the companion 757 "will be the most demanding in FAA history."

This is partly because of new flight control and manufacturing concepts that will be applied to the 767, which will have to be thoroughly evaluated before they can be approved. It also is partly because of the DC-10 crash in Chicago in May of 1979 that focused widespread attention on the type certification process, even though it was eventually established that there were no shortcomings in the certification of that aircraft. Another factor is changes in the type certification procedures that were initiated by the FAA before the DC-10 crash.

There will probably be more changes in the future, mainly as a result of recommendations made last year by a blue-ribbon panel of the National Research Council after a six-month study of the certification process. But these changes are not expected to be major, because the panel found that the process itself is basically sound. Other changes could be made as a result of a continuing effort by the FAA to improve the process.

It is a process that has evolved over the more than 50 years that the FAA has been certificating aircraft. It started with wood and canvas models that seldom flew faster than 100 miles an hour and has kept pace with the ever-changing technology that brought us into the jet age and made airline travel the safest form of transportation in the country.

FAA engineering test pilot Earl Chester tries on a cockpit mockup of the B-767. He expects to test the real cockpit when the aircraft flies late next year.

Photos courtesy of The Boeing Company

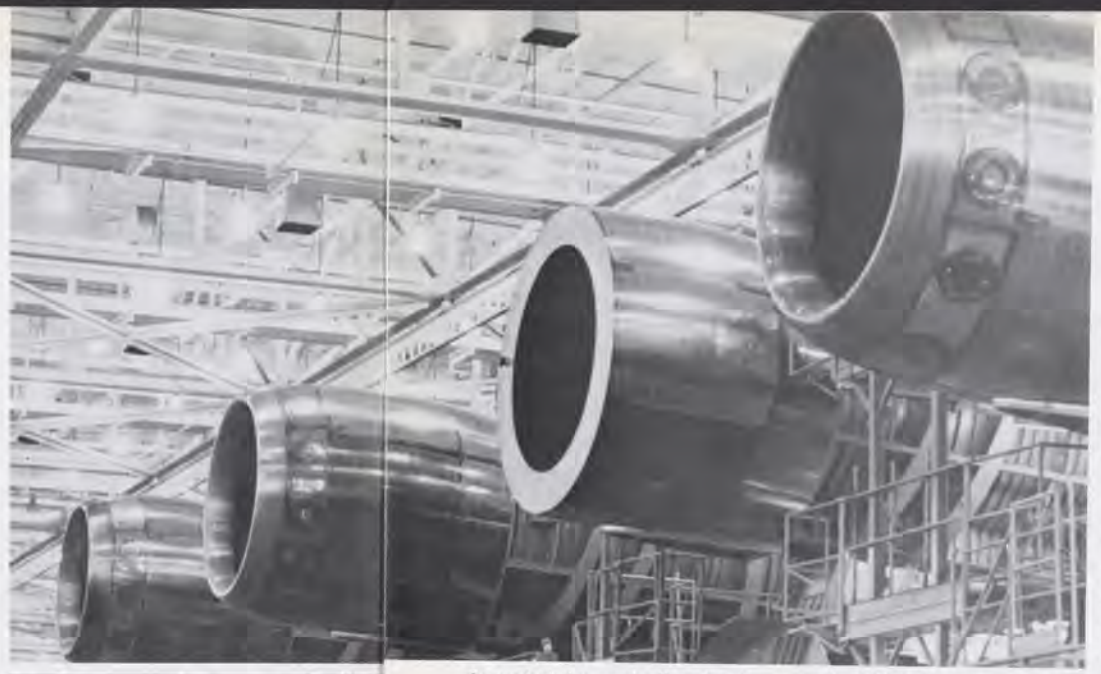
This does not mean that mistakes have not been made. They have. And the FAA has come under increasing criticism in recent years for such alleged shortcomings as merely rubber-stamping designs submitted by the aircraft manufacturers, for being overly concerned with the economic well-being of the manufacturers and the airlines and for relying too heavily on employees of the manufacturers in verifying technical data submitted in support of new aircraft designs.

But the FAA believes, and the blue-ribbon panel agreed, that the certification process is basically sound. As the blue-ribbon panel said, ". . . we have discovered nothing in the course of this study that would lead us to conclude that the confidence gained in the airworthiness of our nation's transport aircraft is unwarranted."

There are two basic documents that control the certification of airlines. They are Parts 21 and 25 of the Federal Aviation Regulations. The first, "Certification Procedures for Products and Parts," spells out how to do it. The second, "Airworthiness Standards, Transport Category Airplanes," sets forth the minimum structural and performance standards the aircraft have to meet.

The standards fill 152 eight-by-ten pages and are detailed and specific. The section entitled "Ground Loads," for example, deals with the following items:

—Ground load conditions and assump-



Following type certification, the manufacturer produces faithful copies under a Production Certificate, such as these DC-10 tail engines being assembled at McDonnell-Douglas, Long Beach, Calif.

Photo by Lloyd D. Falls, Oakland Tower

tions, landing gear arrangements, level landing conditions, tail-down landing conditions, one-wheel landing conditions, side load conditions, rebound load conditions, ground handling conditions, takeoff run, braked roll conditions, turning, nosewheel yaw, pivoting, reversed braking, towing loads and ground load: unsymmetrical loads on multiple-wheel units.

Similar sections cover the other conditions, either on the ground or in flight, that bear on the safety of flight and the structural parts of the aircraft that are vital to the physical integrity of the aircraft.

The key section dealing with the structural integrity of the aircraft is the one that says:

"The airplane systems and associated components . . . must be designed so that (1) the occurrence of any failure condition which would prevent the continued safe flight and landing of the airplane is *extremely improbable* [emphasis added], and (2) the occurrence of any other failure condition which would reduce the capability of the airplane or the ability of the crew to cope with adverse operating conditions is *improbable*."

Extremely improbable is defined as a billion-to-one chance in any hour of flight. Improbable means a 100,000-to-one chance in any hour.

Part 25 also requires that the airplane be designed so that if a critical structural part fails, other nearby parts can absorb the load.

The certification process begins when the manufacturer notifies the FAA that it is going ahead with the development of a new type of aircraft and requests that the agency establish a Type Certification Board for that airplane. The certification board is a panel of FAA engineers that—when it concludes that all of the applicable provisions of Part 25 have been met—issues the Type Certificate.

In the case of the 767, Boeing had its first meeting with the certification board on Sept. 19, 1978. The company outlined the design of the aircraft, its expected performance and the new developments it would incorporate. The certification board took this information and studied it in detail for several months.

On June 12, 1979, the certification board had another meeting with Boeing. At this meeting, the board told Boeing, "These are the standards we believe this new airplane must meet." This was the start of the vital and complex job of establishing what is known as the Certification Basis for the airplane.

Legally, a new type of aircraft only has to meet the airworthiness standards that were in effect at the time the manufacturer filed its application for a Type Certificate. To require a manufacturer to keep changing the design of the aircraft to meet newer standards that were adopted during the development of the aircraft would be economically unrealistic and discourage the development of new aircraft.

It is not uncommon, however, for a manufacturer to file an application for a Type Certificate long before it actively begins the development of the airplane. In the case of the 767, for example, Boeing filed the application on Oct. 13, 1976. So, the FAA often negotiates with the manufacturer to get it to agree to comply with the standards that were in effect when the certification process was actually begun. There is no negotiation over standards that were in effect at the time of the application for a Type Certificate and that clearly apply to the new aircraft.

Robert Whittington, Regional Director of New England, the lead region for engines, examines models of engines used on Boeing aircraft in the Advance Technology Lab at Boeing's Renton, Wash., facility.

In the case of the 767, Boeing agreed to comply with all or part of 20 more-stringent standards that were adopted after it filed for the Type Certificate.

Typical of these is the new standard for aircraft tires that says that the main landing-gear tires have to be able to support 1.07 times the maximum ramp weight of the airplane. The old standard said that they only had to support the maximum takeoff weight of the airplane.

The result is more than a .07 percent increase in tire strength, since the maximum ramp weight of the plane—its weight sitting at the ramp with its maximum load of fuel, passengers and cargo aboard—is higher than its maximum takeoff weight. This is because it burns up fuel taxiing to the takeoff point.

Also, depending on the individual characteristics of the airplane involved, the agency can require that it meet special conditions before it can be certified.

The recent certification of the McDonnell-Douglas DC-9-80 provides an example of how this works. The DC-9-80 is the latest in a series of models of the DC-9, and it was certificated under an amendment to the original Type Certificate for the DC-9. Since the original DC-9 was certificated in 1965, the DC-9-80 would legally have been required to meet only those standards required of the original. But McDonnell-Douglas agreed to comply, with only a few exceptions, with the regulations in effect in 1977.

In addition, the FAA imposed several special conditions, such as one that requires that the airplane's new automatic thrust control system be designed so that if one engine failed on takeoff, the system would not increase the power on the other engine beyond its operating limits.

Once the Certifiation Basis is established, the FAA begins the job of making sure that the airplane meets the standards.

In the case of the 767, the airframe and the engine technology is fairly conventional, and no major problems are expected. Much of the attention will be focused on the computerized flight control system—which will be the most sophisticated so far—and on the composite materials that Boeing plans to use for the control surfaces, engine cowlings and fairings.

The composite materials—synthetic fibers encased in a resin matrix—have high strength-to-weight ratios, but their use in aircraft is still relatively new. The FAA will be watching closely to make sure they can be used safely.

As the process continues, the manufacturer will submit hundreds of thousands of pages of engineering data and drawings to the FAA aimed at proving that the airplane meets the specifications in Part 25.

This is where the controversial Designated Engineering Representatives (DERs) get into the process. These are employees of the manufacturer who are deputized by the FAA to review and verify certain elements of the design.

The FAA does not have enough people to conduct these reviews independently. For example, approximately 50 FAA en-

gineers will be working on the 767, whereas Boeing will have approximately 4,000 at the height of the development program. So, FAA uses the DERs to conduct the hundreds of routine, non-critical reviews that are required in the certification process. The critical ones dealing with the basic integrity of the aircraft are done by FAA engineers.

Congress authorized the use of the DERs in 1950 when it became clear that the aviation industry was growing so fast that the FAA would never have a large enough staff to check all the details in an aircraft's design. Thirty years later, the blue-ribbon panel concluded that the use of the DERs "is not only appropriate but indispensable."

Once the first prototypes are built, the new airplane enters the flight test stages. The purpose of these is both to confirm that the aircraft can indeed perform as advertised and to identify any unforeseen structural or control problems.

In the case of the DC-9-80, more than 1,000 hours of flight tests were logged, 400 of them by FAA test pilots.

As the certification process moves along, another FAA group known as the Maintenance Review Board meets. Its job is to review and approve the maintenance program that the manufacturer will recommend for the airplane once it goes into airline use.

The FAA's interest in the airplane does not end with the issuance of the Type Certificate. Before the manufacturer can go into production, he must have a Production Certificate. This says that the FAA has determined that the manufacturer is capable of making faithful copies of the airplane that comply with the specifications in the Type Certificate.

FAA inspectors Kelly Paulson and Jim Devaney (center and right) review cabin safety signage for the 767 with Jim Ternet, Boeing Company representative.

Further, each individual aircraft must have an Airworthiness Certificate attesting that it meets the specifications.

The FAA continues to monitor the airplane after it has gone into airline service. The agency keeps a close watch on the performance of the airplane and on problems that are identified through the Service Difficulty Reports that airlines must file when mechanical or structural problems arise.

As M. Craig Beard, director of FAA's Office of Airworthiness, said in a recent speech on the certification process, "Once a type-certificated aircraft enters service, it begins to talk back to us, and it becomes important that both the manufacturer and the airworthiness authorities . . . receive these communications and act promptly on them."

If it is a problem that compromises the safety of the airplane, the agency issues an Airworthiness Directive requiring that the problem be corrected on every airplane covered by the Type Certificate. It can, if necessary, do this on an emergency basis that requires corrective action before further flight.

If the circumstances warrant, it also can suspend the Type Certificate on the airplane. This is what the agency did in the case of the DC-10 following the accident in Chicago. It was, admittedly, a drastic step, but it was not immediately clear what had caused the left engine to tear away from the wing as the doomed aircraft was taking off at Chicago's O'Hare airport.

The situation became even more uncertain with the discovery in other planes of what appeared at the time to be unexplainable cracks in the pylon that holds the engine to the wing. Not knowing for sure what to correct, the agency could not issue an Airworthiness Directive to correct it. Instead, it suspended the Type Certificate, grounding all of this country's 138 DC-10s until it could determine what the problem was.

It was eventually determined that the cause of the accident, and of the cracks that were subsequently found in the pylons, was an improper maintenance procedure in which a forklift truck was used to remove the engine and the pylon from the wing as a unit. The procedure was outlawed and the Type Certificate restored.

By this time,however, the whole type-certification process had been called into question, particularly when the FAA could not immediately prove that the design of the pylon had been adequately documented during the process.

As a result:

- The FAA conducted a special six-month study into the design of the pylon. It found that the design was sound and that it could last longer than the expected life of the aircraft, as long as it was not damaged by improper maintenance.
- A Congressional subcommittee conducted a study of the certification process and issued a highly critical report. It was particularly critical of the use of the DERs.
- The Secretary of Transportation asked the National Research Council to put together a blue-ribbon panel to review the certification process.

The subcommittee, headed by Rep. John L. Burton (D-Calif.), charged that the FAA has overdelegated its authority to the DERs, does not properly monitor their performance and lacks the enforcement authority to hold them accountable for their actions.

It also charged the agency with laxity in

A 757 mockup gets a wing assembled.

The DER's Role: Safety Before Economics

Frank Fickeisem is an electronics engineer who has worked for the Boeing Company for 29 years. He now is working on the flight control system of the 767, and his job is to get it developed and certificated by the FAA.

He also is the Designated Engineering Representative on the flight control system. He believes that the fact that there is a possible conflict of interest inherent in holding both jobs is the best guarantee against his putting Boeing's interest ahead of that of the FAA and the flying public.

"I think everyone in the DER role is aware of that possibility," Fickeisem said. "This very awareness precludes its becoming a reality."

Has he ever been asked to falsify any information; to fudge on test results to save his employer time or money? His answer is "no." "In my experience, Boeing has never taken any liberties with the FARs. When they have been uncomfortable with a requirement—one that they believe provides only a very small amount of added safety at a considerable increase in cost—they go back to the FAA and try to get it changed or relaxed. But they never fake it."

Is he concerned about the possibility of being sued if the cause of an accident could be traced to his work as a DER? "No. If I worried about that, I would also have to worry about getting sued as a result of doing my other job. The bottom line is the same in both jobs—making sure that we have the best and safest product possible.

"But if I was sued," Fickeisem adds, "my relationship with the company is such that they would share the responsibility with me."

Isn't he at all concerned about the economic interest of the company he works for; a company that has to show a profit if he is going to get paid? "Of course I am, in the broad sense. But clearly everybody in aviation—the FAA, the manufacturers, the air lines and the pilots—has an interest in safety.

"I don't think any of us would let economics come before safety." ■

Enjoying the feel of the cockpit of the 767 engineering mockup at Everett, Wash., are (left to right) Flight Standards Division assistant chief Tom Imrich, Dick Taylor of the Boeing Company and Northwest Regional Director Charles R. Foster.

enforcing quality control in the manufacturing process and with having an inadequate system for reporting mechanical and other problems discovered during the maintenance and inspection processes.

The blue-ribbon panel concluded that while the overall process is sound, there are some problems. Foremost among these, it said, is the danger that as expected rapid technological changes in the aviation industry come about, the expertise of the FAA engineers engaged in certification could fall below that of the engineers working for the manufacturers.

The FAA had recognized this as a danger prior to the issuance of the report and had begun a program to recruit the best-possible engineering talent from throughout the aviation industry to work on aircraft certification. The first of these experts has been recruited, and others are expected to sign up shortly.

The blue-ribbon panel also said that the agency should keep the public fully informed about what it did and why in the certification of any particular aircraft. This the agency has already done in the case of the DC-9-80 and will do with the 767 and other new aircraft.

The blue-ribbon panel did not, however, support the contention of the Air Line Pilots Association (AFL-CIO) and others that outsiders should participate in the certification process. The panel said the process should remain limited to the FAA and the manufacturer. The Air Line Pilots Association contends that because it represents most of the pilots that fly the aircraft, it should have a voice in the certification process.

Marvin Perkins, designated manufacturing inspection representative at Boeing's 747 plant, records airplane certification status and type inspection reports each step of the way on a status board.

The FAA is expected to respond to the other recommendations of the blue-ribbon panel shortly.

Another action that the FAA took to strengthen the certification process prior to the issuance of the panel's report was the establishment of lead regions for the certification of aircraft.

Previously, aircraft were certificated by the FAA region in which the manufacturer was located. This, the agency decided, tended to spread out and dilute the agency's expertise in different types of aircraft. It would be better, the agency reasoned, to concentrate the expertise where it would be used the most.

So, the Northwest Region—where Boeing, the largest manufacturer of airliners in the world, is located—became the lead region for the certification of large transport-category airplanes. The New England Region, which had the most experience in the certification of engines, became the lead region for engines.

Similarly, the Central Region became the lead region for small airplanes, the Southwest Region for helicopters and the Great Lakes Region for propellers.

Other changes also are in the works. When the DC-9-80 was certificated last August 25, FAA Administrator Langhorne M. Bond announced that the FAA would propose a new regulation that would require that the certification of that aircraft, and any new ones that come after it, be reviewed after eight years of service. The purpose would be to see if any new safety features or concepts that had been developed in the interim should be incorporated in it.

The initial industry reaction to the proposal was negative. Industry was, to say the least, uncomfortable with a proposal that runs counter to the tradition in the aircraft manufacturing business that once an aircraft has been certificated, that certification is good indefinitely. Industry representatives also made it clear that they thought the proposal was being made not for technical reasons but for political reasons growing out the Air Line Pilots Association's objection to the certification of the DC-9-80 for operation by two flight crew members instead of three.

Bond also announced the beginning of a definitive study of the human factors involved in flying, so they can be taken full account of in the designing of airliner flight decks.

All of this, as with all that has gone before in the certification of aircraft, is aimed at one goal—making the product so good that there will never be a need to invoke the warranty. ■

By Theodore Maher
The editor of *Intercom* and a frequent contibutor to FAA WORLD, he is a former editor of *Our Navy* and former associate editor of the *Navy Times*.

A Program That Works

Western Region Forces Job Problems Into the Open

He looked like a young man, but John Smith—we'll call him— was a young 40-year-old. He smiled easily when he said, "I never had as much confidence in myself as I do now, and I never felt so good.

"Back when I had a drinking problem, they threw the book at me—all ten volumes of it—and I'll tell you the truth: I hated it. I knew I was a problem. Somehow I understood that, but I thought the boss was handling it—that is—me, all wrong. I was angry at the whole situation, but I was frightened, too.

"When they kept after me, it was as though I was being hunted. I knew when they stayed on my tail that my job was in jeopardy.

"Then I was really scared when the boss showed me that he had my case documented. That did it; that was all I needed. I turned myself into the hospital for treatment. At the time I was thinking, I'll show him who's boss. It wasn't until a couple of days later that I knew I'd done exactly what he wanted me to do.

"That all happened a couple of years ago. Since then, I haven't had a drink; no one's been on my back and my life gets better and better."

A Western Region flight service station specialist, Smith paused before he added, "When I think back, I concede that my boss handled the problem just fine. I never would have quit if I'd thought I could get away with it. I didn't even consider doing anything until my job was threatened."

Smith is an end product of the Western Region's alcoholism rehabilitation program. According to Fritz Sperling, alcoholism program coordinator, the program title is somewhat misleading because it's set up to deal with all kinds of problems—not just alcoholism. "It's really a personnel management program with an emphasis on alcoholism, since booze is the major cause of employee job problems.

"The key to the success of our program is the supervisor, and we have concentrated on training supervisors. So far, 600 of the region's 800 supervisors have attended special training sessions."

In these sessions, supervisors are taught to help problem employees by concentrating on the job problem and not the cause of the problem. They are emphatically not trying to make diagnosticians of the supervisors. That is exactly what they are trying to avoid.

Another thing they are trying to avoid is the traditional way of dealing with problem employees. Traditionally, employee with problems that affect their job performance are often ignored or eliminated from the organization, says Sperling. Usually, when they are eliminated, it is after a long period of being ignored.

One of the cornerstones of Western's program is the third alternative. "Simply put," Sperling explains, "the third alternative is: take action early. This means that supervisors should intervene even before understanding the cause of the problem."

Traditionally, supervisors have tried to get to the root of the problem before taking action, but this led to inaction. When they couldn't pinpoint the cause, they ignored the problem.

Sperling points out that it's not necessary to know the cause of, for instance, absenteeism or lateness before talking to the employee about the problem. Admitting that the job problem does exist can't do any harm, Sperling insists, and it is the only way to start solving the problem. Program managers realized they were asking supervisors to travel a somewhat unfamiliar road, and they saw that they needed a set of explicit guide posts.

To show supervisors in the field exactly what to do, the regional office came up with a five-step program:

- The first is to identify and document—with document underlined—the job-related problem. Note, that the task here is not to determine if the employee is on drugs, an alcoholic or incapable, but to put the cards on the table. This is done during a non-threatening employee-supervisor discussion. Maybe this step sounds like something that is so obvious that it hardly needs to be said, but the fact of the matter is that most supervisors talk to everyone except the employee about such problems. The last part of "step one" is to set a deadline for another look at the problem. "Let's meet again in 30 days," will do just fine, "then we will see if the situation has improved or if further action is necessary."

At least 80 percent of the time, step one resolves the job problem. If the problem persists, chances are that both the employee and the supervisor need outside help.

- Step two, the consultation step, requires the supervisor to contact the program coordinator before taking any further action. In this region, it's Fritz Sperling. This is important for a number of reasons. First, the emphasis throughout this program is early action, and this step gets the coordinator into the game early, in time to develop a long-term strategy. It also gives support to the supervisor and gives him a sounding board with just the expertise he needs. Most importantly, Sperling will give the supervisor the name of a professional counselor whom the employee can contact in case he agrees he needs help to deal with the cause of his job problem.
- Step three is the confrontation step. The supervisor begins progressive discipline in accordance with the strategy developed at Step Two. He will agree to postpone discipline only if the employee promises to seek professional help for his problem. Particularly at this point, supervisors should keep in mind that they are trying to motivate the employee to seek help—not, even if alcoholism is suspected, to stop drinking. The supervisor is not expected to go beyond the job-related problem. Let the counselor work on the drinking, the drugs or whatever.
- Step four is contingent on the employee's reaction to step three. Referral to treatment is made only when the employee elects this course rather than be faced with certain, severe disciplinary action. With an alcoholic, it eventually comes down to choosing the bottle or the job. Once in treatment, disciplinary action stops, and the problem employee receives the same consideration and support as any other ill employee.

If the employee at any point refuses to go along with the recommended program, the supervisor must proceed with disciplinary action.

What's been startling in the Western experience is how quickly step four is reached once the supervisor makes up his mind to take action. Most alcoholics value their jobs over anything else in their lives. As Sperling puts it, "Our biggest problem is not the alcoholic in the work force; it's the supervisor of the alcoholic. Most refuse or fail to take job action; instead, they protect or cover-up for the alcoholic. In effect, they literally kill the employee with misguided kindness."

- Step five is when the employee is back on the job, productive and meeting the supervisor's expectations. The supervisor's task is to make it clear that the ball game hasn't changed. Any recurrence of the job problem will not be tolerated.

The effectiveness of the five-point program became apparent after talking to Hugh Southerland, chief of the Las Vegas Flight Service Station. He had attended Sperling's special class, and he was "the boss" that John Smith at first cursed and then thanked.

Southerland's tale is particularly interesting because of the way it dovetails with the program outlined by Sperling and the feelings, thoughts and events experienced by John Smith.

When Smith's problem first began to emerge, Southerland didn't know what to do. Here was a likable and potentially valuable member of the team who was becoming more and more of a problem.

Smith didn't seem able to get to work on time. He was abusing his sick leave, and his behavior was uncomfortably erratic. At this point, Smith's immediate supervisor disciplined him for a one-time incident of drinking on the job. That didn't seem to work. The problem got worse. Southerland talked to him—step one—but the problem persisted.

Southerland thought of sending Smith to this family doctor. Instead Southerland consulted Sperling—step two. Sperling said "no" to the family doctor idea. He advised a confrontation meeting—step three.

During this meeting, Southerland confronted Smith with the documented case. Smith said he thought his problem was alcohol, and he agreed to get help.

"This is just the outline," Southerland said. "Of course, there were a lot of talks in between.

"After Smith got help, we followed right up," Southerland said. "We'd seen the program work, and we went right along with it. Now, he's just another guy, doing his job, and that's great."

Because some employees must have medical clearance for their job, the regional flight surgeon, U. A. Garred Sexton, said that his office will do everything possible to get employees back as soon as possible. "For controllers, this means back on the boards, controlling live traffic, as soon as possible," he said.

Dr. Sexton pointed out, "Although we have saved a number of employees from the consequences of alcohol, we have not removed a single controller for being alcoholic in the past eight years."

And that just about sums it up. A.A.—Alcoholics Anonymous—often the follow-up program for one-time problem employees, has gained national and international acceptance and recognition over the years simply because it works.

By the same token, the Western Region program is proving in the field that it has the same inherent quality: It works! ■

People

Alaskan Region

■ **Jerome K. Fujimori**, construction & maintenance foreman at the King Salmon AF Sector, from the Cold Bay Sector Field Office.

■ **James R. King**, chief of the Bethel Flight Service Station, from the Zanesville, Ohio, FSS.

■ **James M. McNerney**, chief of the Petersburg AF Sector Field Office, Juneau Sector.

■ **Floyd Pattison**, chief of the Planning and Programs Branch, Airports Division, from the Safety and Standards Branch.

■ **Robert M. Strong, Jr.**, assistant manager of the Juneau AF Sector, from the Engineering Branch, AF Division.

■ **Dean M. Vance**, chief of the Nome AF Sector Field Office.

Central Region

■ **Harold C. Luedtke**, chief of the Wichita, Kan., Engineering and Manufacturing District Office.

Eastern Region

■ **William J. Boettcher**, team supervisor at the Westchester Tower, White Plains, N.Y.

■ **Matthew E. Dean**, team supervisor at the Washington ARTCC.

■ **Richard J. Kraft**, team supervisor at the Washington ARTCC.

■ **William L. Lovegreen**, chief of the Pittsburgh, Pa., Air Carrier District Office.

■ **John V. McElgin, Jr.**, team supervisor at the Du Bois, Pa., Flight Service Station.

■ **Charlesan R. Neugebauer**, chief of the Andrews AFB Tower, Camp Springs, Md.

■ **Carl M. Rodgers**, team supervisor at the Westchester Tower.

Great Lakes Region

■ **Lloyd D. Eastburn**, chief of the Danville, Ill., Tower, from the Champaign, Ill., Tower.

■ **Allan M. Hamamey**, chief of the Youngstown, Ohio, Tower, from the Evaluation Branch, Air Traffic Division.

■ **George G. Hughes**, team supervisor at the Champaign Tower, from the Muskegon, Mich., Tower.

■ **Lawrence D. Le Clair**, team supervisor at the Indianapolis Flight Service Station, from the Hibbing, Minn., FSS.

■ **James P. McNally**, assistant chief at the Chicago ARTCC, from the Air Traffic Operations Branch.

■ **Robert W. Smith**, area officer at the Minneapolis, Minn., ARTCC.

■ **Donald P. Sodetholm**, assistant chief at the Minneapolis ARTCC.

■ **Jack L. Taulbee**, team supervisor at the West Chicago FSS.

New England Region

■ **Raleigh W. Beach**, chief of the Providence, R.I., Tower, from the Quonset, R.I., Tower.

Northwest Region

■ **Frederick T. Alexander**, assistant chief at the Seattle-Tacoma, Wash., Tower, from the Renton, Wash., Tower.

■ **Alan W. Bracy**, assistant chief at the Portland, Ore., Tower.

■ **Gordon A. Burnet**, assistant chief at the Portland Tower.

■ **Jerry A. Johnson**, team supervisor at the Portland Tower, from the Boeing Field Tower in Seattle.

■ **James W. Lehman**, chief of the Everett, Wash., Tower, from the Long Beach, Calif., Tower.

■ **Donald L. Mattes**, program support officer at the Portland Airway Facilities Sector, from the Pasco, Wash., AF Sector.

■ **Jack G. McDonnell**, assistant chief at the Portland Tower.

■ **Julian W. Morrison**, program support officer at the Spokane, Wash., AF Sector, from the Spokane Geiger Sector Field Office.

■ **David W. Randall**, program support officer in the Boise, Ida., AF Sector, from the Maintenance Operations Branch, Airway Facilities Division.

■ **Ronald F. Rhoades**, assistant chief at the Seattle-Tacoma Tower.

■ **James C. Smith**, assistant chief at the Seattle-Tacoma Tower.

Pacific-Asia Region

■ **William F. Brissette**, team supervisor at the Honolulu ARTCC, from the headquarters Air Traffic Service.

■ **John H. Covey, Jr.**, assistant chief at the Honolulu ARTCC.

■ **Ronald Y. Ichimura**, team supervisor at the Honolulu Tower.

■ **Kenichi Nomura**, assistant chief at the Honolulu ARTCC.

Rocky Mountain Region

■ **Charles R. Moore**, assistant chief of the Training Branch, Personnel Management Division, from the Colorado Springs, Colo., Tower.

Southern Region

■ **Jeffery C. Barry**, team supervisor at the Jacksonville, Fla., ARTCC.

■ **Charles T. Bauman**, chief of the Atlanta, Ga., Hub Airway Facilities Sector.

■ **Joseph D. Brown**, chief of the Mobile, Ala., Flight Service Station, from the Macon, Ga., FSS.

■ **Gene H. Campbell**, area officer at the Memphis, Tenn., ARTCC.

■ **Dale H. Cannon**, chief of the New Bern, N.C., Tower, from the Opa Locka, Fla., Tower.

■ **Robert J. Craig**, team supervisor at the Miami International Tower.

■ **John F. Keesey**, team supervisor at the Muscle Shoals, Ala., FSS, from the Air Traffic Branch, FAA Academy.

■ **William D. Kenna**, team supervisor at the Orlando, Fla., Tower, from the Savannah, Ga., Tower.

■ **David R. Roberts**, chief of the Isla Grande Tower in San Juan, Puerto Rico, from the San Juan Center/RAPCON.

■ **Raymond E. Schlarb**, team supervisor at the Macon Tower.

■ **Daniel R. Webster**, chief of the New Bern FSS, from the Alma, Ga., FSS.

Southwest Region

■ **Walter M. Ernst, Jr.**, chief of the Oklahoma City General Aviation District Office, from the Central Region Planning Staff.

■ **Carlos O. Gonsalez**, deputy chief of the El Paso, Tex., Flight Service Station, from the Las Vegas, N.M., FSS.

■ **Ruben Gonzalez**, deputy chief of the Tulsa, Okla., Tower, from the Stinson Municipal Tower, San Antonio, Tex.

■ **Paul G. Johnston**, deputy chief of the Corpus Christi, Tex., Tower, from the Tulsa Tower.

■ **Wilmar W. Klaehn**, chief of the Midland, Tex., AF Sector Field Office, Lubbock AF Sector.

■ **Denson D. McNully**, chief of the Addison, Tex., AF Sector Field Office in the Dallas-Fort Worth Airport Sector, from the Lubbock, Tex., AF Sector.

■ **Byron H. Melius**, team supervisor at the Oklahoma City Tower, from the Automation Staff, Air Traffic Division.

■ **Billy G. Mohon**, systems engineer at the Houston, Tex., ARTCC AF Sector.

■ **Charles Pena**, program support officer in the San Antonio AF Sector.

■ **Tommy T. Ray**, team supervisor at the Tulsa Tower.

■ **Max Sanchez**, chief of the Las Vegas, N.M., FSS, from the Lubbock FSS.

■ **Cecil F. Strange, Jr.**, chief of the Houston AF Sector Field Office.

■ **Edward J. Sweeney**, chief of the Amarillo, Tex., AF Sector Field Office in the Lubbock AF Sector.

■ **Oscar Vaca**, systems engineer at the Fort Worth, Tex., ARTCC AF Sector, from the El Paso AF Sector.

■ **Bennie C. White**, assistant chief at the Dallas-Fort Worth Tower.

Western Region

■ **Frank Arcidiacono**, team supervisor at the Los Angeles ARTCC.

■ **Larry A. Fiscus**, team supervisor at the Coast TRACON-El Toro MCAS, Santa Ana, Calif.

■ **James W. Greenwood**, assistant chief at the Los Angeles Flight Service Station, from the San Diego FSS.

■ **Robert J. Lamora**, manager of the Sacramento, Calif., AF Sector.

■ **Forney A. Lundy, Jr.**, assistant chief at the Los Angeles ARTCC, from the Oakland, Calif., ARTCC.

■ **Lawrence L. Parrent**, team supervisor at the Coast TRACON-El Toro MCAS, from the Tahoe Valley, Calif., Tower.

■ **Arthur E. Pearsall**, chief of the San Diego Air Carrier District Office.

■ **Curtis D. Ranz**, team supervisor at the Los Angeles ARTCC.

■ **Steven W. Regan**, team supervisor at the Los Angeles ARTCC.

■ **Melvin H. Smith, Jr.**, team supervisor at the Scottsdale, Ariz., Tower, from the Las Vegas, Nev., Tower.

■ **Stanley S. Stuka, Jr.**, assistant chief at the Burbank, Calif., Tower, from the Los Angeles Tower.

■ **William R. White**, team supervisor at the Coast TRACON-El Toro MCAS, from the Long Beach, Calif., Tower.

■ **Harrison N. Yoneda**, assistant chief at the Salinas, Calif., FSS, from the Oakland FSS.

By Thomas S. Hook
Acting chief of Headquarters' Public Inquiry Center, he is the author of two books on the U.S. Navy's rigid airships.

'Wheels' for a Wheelchair

"Don't laugh when you see it," said wheelchair-bound Ken Hawkins as we rounded the corner to the west side service driveway of FAA Headquarters. "My wife thinks it's cute!"

That wasn't exactly the word for his recently acquired blue 1976 Chevy cargo van with its gray camper top. The short, 110-inch-wheelbase van is a whopping 8½ feet tall, but it's hardly a laughing matter. Without this modified "Blue Max"—Hawkins' CB radio handle—his job would be in jeopardy. It's now his only suitable transportation.

It all began 23 years ago, and Hawkins has been overcoming obstacles ever since. As a six-foot, one-inch tall 17-year-old, he and two high-school pals, who loved camping, crabbing and sports, arose early one Memorial Day by a creek near St. Mary's City, onetime capital of Maryland. The trio hurried for a wake-up swim at the pier they had dived from on previous visits. One companion jumped feet-first into the cool, refreshing water.

Hawkins, not aware that the tide was much lower than usual, dived in next. His head impacted abruptly on the bottom, only three feet from the surface. Something snapped. For an endless minute, he lay trapped under water motionless, facing the mud and unable to move any part of his body from his shoulders down. Light from behind showed him which way safety lay. He wondered if he would survive. Fear overcame pain.

Hawkins' buddies dragged him from the water and sought medical help. His neck was broken!

In what had been the prime of his youth, quadraplegic Ken Hawkins joined the ranks of 35 million handicapped persons in the United States, 19 million of them with impaired mobility. He had lost forever any sensation from his waist down.

For the next six months, Hawkins was hospitalized, ice-tong-like clamps attached to holes drilled in his head that bore 14 pounds of weight to stretch his neck. There followed a long, slow recovery at his home, where he lifted weights and read extensively to fill in the time. Considered unemployable because of his sever disablement, he "goofed-off" for almost two decades.

About 1975, however, problems of the handicapped began to get long-needed attention from the the Federal Government, which had the necessary clout to eliminate barriers and provide better access for the handicapped.

Disappointed early-on with his guidance counselors and job coordinators, Hawkins at last struck pay-dirt in the form of George Washington University's Job Development Laboratory, a mecca for state rehabilitators from around the nation. The lab's experienced staff began working with Richard Cullen of FAA's Office of Personnel and Training, discarding the old concept that the person hired should fit the job. With Cullen, they made worksite evaluations to determine which jobs could be made to fit the person.

Hawkins' solo performance with the Blue Max starts with a toggle switch panel on the rear fender, which opens the doors and lowers the lift gate.

For Hawkins' beginning job as a mail file clerk, FAA modified four electronic circular files and made other equipment modifications.

"The lab people made all kinds of gadgets—such as lap trays, reachers and the like—to give me greater dexterity and to overcome my weak hands," Hawkins said. He had to stretch his endurance and now is able to stay up for 15-18 hours a day. "FAA took a chance with me and I with the agency," he added.

In each of his three years of employment, he has received a grade promotion

He enters the van facing forward but turns around to leave to assure himself that the platform is fully lowered. The control panel for the lift and doors is on the left door.

Because the Blue Max couldn't fit in the agency garage, a service driveway space was provided and a curb cut installed to permit Ken Hawkins to enter the building at terrace level.

In the driving position, his wheels are locked in channels that are electrically lowered five inches. The console at his right operates lights, heater, air conditioning, radio, wipers, washers and ignition.

Update

Torrance, Calif., *Daily Breeze* photo by Jack Lardomita

A Home for Hercules

Howard Hughes' famous "Spruce Goose," which is built of birch, not spruce, has taken the second longest trip of its sheltered life. It is now resting near the retired Queen Mary, where, after being officially listed as a national historical site, it will be put on display as a tourist attraction. According to the current schedule, tourists will be able to examine the large and, in some ways, ungainly aircraft beginning in June 1981.

The plane is currently owned by the Summa Corp., a holding company that was set up by Hughes. However, it has been turned over to the Aero Club of Southern California, which is leasing the monster to the Wrather Corp. as a tourist attraction. On its second longest, recent move, the plane was floated and then towed from one side of the bay at Long Beach, Calif., to another. On the plane's longest journey in 1947, the plane taxied extensively before flying over a mile under its own power. The plane, which was named by Hughes the "Hercules," was begun in 1942 and finished in 1946. At that time, it was the largest aircraft in the world, and the wingspan is still the longest of any aircraft. It weighs 140 tons and has a 320-foot wingspan.

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