FAA | AVIATION NEWS

SEPTEMBER 1962

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ROOM FOR DIVERSITY

Some of the diverse facets of American aviation are on view this month in these pages. They are small but intriguing parts of an impressive whole. And they aptly show that along with its great utility and efficiency, flying can truly be fun.

One is soaring. With slight help from a powered vehicle, the sailplane pilots go aloft to fly the air currents in a tough but satisfying test of airmanship.

The other is experimental aircraft. Sporting pilots draw great satisfaction from flying aircraft they have designed and built, or venerable craft they have tailored to their own taste.

The FAA is a partner in each field, working to promote safety while permitting pilots the greatest practical latitude. The airmen are certificated, of course, and so are the vehicles. The Agency also manages the airspace to provide room for these pilots to pursue their novel activity.

Experimental aircraft call for special treatment by FAA inspectors. Since each is different, each is a new design and production problem. Our men work closely with airmen to make sure every new airplane meets adequate safety standards.

This work is merely an unusual extension of the FAA's role with conventional aircraft—assuring that design and production will produce a safe airplane.

These are cooperative efforts shared by airmen, inspectors, engineers and manufacturers working toward the common goals of safe flying and public confidence in aviation.

Government-industry cooperation has produced an air fleet and aviation system unparalleled anywhere in the world. There are well over 80,000 general aviation aircraft, and they are expected to multiply to 105,000 by 1970. American airline passengers are the best served in the world. All this is accomplished with a good safety record.

Cooperation and understanding will foster a National Aviation System in which diversity will continue to flourish. It will be a system which effectively serves the nation's welfare—yet has plenty of room for such activities as soaring and sport flying.

CONTENTS

COVER: Following review and approval by the Federal Aviation Agency, the Lockheed JetStar is growing from a 10-place to a 12-place jet transport with no change in size or performance.

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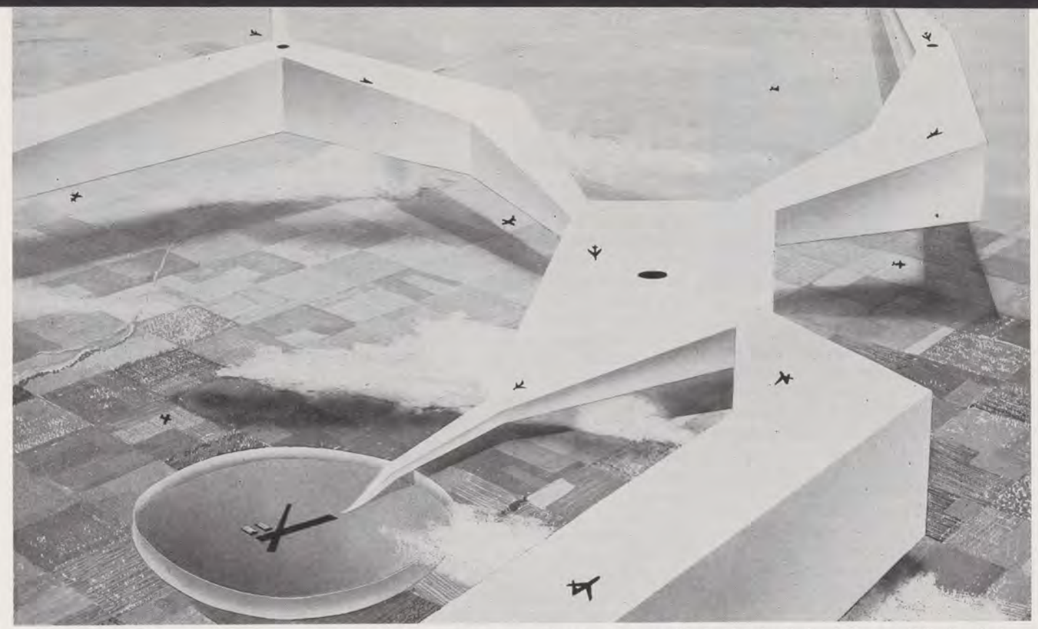


Terminal area corridors would facilitate landing operations for aircraft at major airports under new "Design for the National Airspace Utilization System."

FAA PROPOSES MODERNIZATION PLAN FOR NATION'S AIR TRAFFIC CONTROL

The Federal Aviation Agency made public last month a detailed proposal for modernization of the nation's air traffic control system to cope with aviation's rapidly growing needs in the years ahead.

The painstakingly drawn blueprint for the airways of tomorrow—and the day after tomorrow—is contained in a 758-page study entitled *Design for the National Airspace Utilization System.* It was drawn up by FAA's 13-man System Design Team, a group of specialists chosen to provide a broad spectrum of aviation experience and knowledge.

Robert J. Shank, FAA's Deputy Administrator for Development, declared in releasing the study that he considers it "perhaps the most important single contribution to the cause of safe and efficient use of our airspace.

"Here for the first time," he said, "is a complete description of airspace utilization design considerations and constraints, and of a system itself that will grow and improve as we move through the immediate and longer-range future."

The System Design Team, headed by FAA scientist Albert Brown, was named last year to produce a design plan based on the general recommendations of the Project Beacon report on air traffic control. This report was prepared by a White House task force of eight experts under the leadership of Richard R. Hough, now Vice President-Engineering of the American Telephone and Telegraph Company.

The Beacon group found the current air control system "expertly operated" but out of date and in need of evolutionary modernization.

The system plan developed by the group under Brown calls for progressive development of an airspace utilization system to meet requirements between now and 1975. Continuing study by the System Design Team, now a permanent element of FAA's Systems Research and Development Service, will keep the design current through this period and provide, as the years pass, for the periods after 1975.

In essence, the design would provide:

- Expansion of geographical areas in which aircraft would be under positive ground control.
- Increased segregation of VFR and IFR traffic in densely traveled airways and terminal areas.
- Further reliance on radar for separation and control of aircraft.
- Gradually stepped up dependence on the Air Traffic Control Radar Beacon System (ATCRBS) rather than primary return from "target" aircraft.
- Development of altitude transponder equipment to provide height information to ground controllers independent of voice radio reports.
- Extensive improvement of air traffic control information-processing and display, with wide use of computers and automation techniques to assist the FAA controller.
- Establishment of terminal area corridors to segregate aircraft by speed and other significant performance capabilities in landing operations, both eliminating delays and augmenting safety.

At present, the team's proposed system is in the process of coordination with government agencies concerned, including the Department of Defense. It is under technical study within the Federal Aviation Agency. The document also is currently being distributed within the aviation community—to industry, airspace user groups, trade associations—with a request for comments. A briefing at the FAA offices in Washington was scheduled for these groups.

Out of this could come modifications in the system plan. Such changes would be reflected in future editions. Regularly revised editions of the *Design for the National Airspace Utilization System* will be published, probably once a year.

Map delineates U. S. air traffic density on typical busy day.

FAA's system designer Brown, R&D chief Joe Blatt in chalk-talk.

As this coordination process continues, the Agency is proceeding with fundamental development work outlined in the study. Moving ahead are programs to develop altitude beaconry gear, to introduce increasing automation into the traffic system and to perfect hardware and techniques that will improve processing and display of data in Air Route Traffic Control Centers. FAA's Systems Research and Development Service expects to meet the target date of January 1, 1964 in establishing at the National Aviation Facilities Experimental Center (NAFEC) a representative model of an improved air traffic control system that incorporates these concepts.

Meanwhile, gradual phasing in of some of the concepts in the Beacon Report and System Design Team study has begun.

In the Atlanta, Ga., area, for example, a major expansion of radar separation service for VFR pilots is scheduled to begin November 15 in line with the concept of terminal segregation of aircraft set forth in the Beacon report and studied extensively by the System Design Team. A radar service area will be established around the Atlanta Airport extending 15 miles out and from 2,000 to 6,000 feet altitude. This area will be for the use only of participating aircraft. The airspace below the area will be for aircraft that do not choose to participate.

Participating pilots will receive substantially the same services provided IFR pilots—radar separation, radar vectoring, radar sequencing for landing and radar advisory. Limited services are now available to VFR pilots at Atlanta, Indianapolis, New York and Washington.

Introduction of this Atlanta system will be considered for other high density terminals after a proving period there.

By the middle of next year, also in line with the System Design Team's work, a computer will be in operation providing substantial assistance for controllers in a new Air Route Traffic Control Center in the New York area. Deputy Administrator Shank has called this computer "the first step towards real automation" in air traffic control.

In the years ahead, under the System Design Team's proposed plan, techniques and hardware would continue to be developed and adopted year by year just as in these instances in Atlanta and New York. Schedules for introduction of increased automation and air traffic control display subsystems are presented in detail in the System Design Team study.

Automation would be progressively introduced. The present system is largely manual with some data processing assistance for the controller. The system would evolve, first, through introduction of computer and automated data-display assistance. Later, computers might provide such "mechanical brain" services to the controller as recommending route and altitude changes for aircraft, sequencing and resequencing planes entering terminal areas, and recommending solutions for conflict situations.

New display subsystems would be placed in service in the implementation steps of this automation process. Mosaic—or composite—presentation would place larger, more inclusive traffic pictures before controllers. Radar beacon readout equipment would provide altitude information and improved identification of aircraft. Alpha-numeric display generation would give the controller further assistance by labeling planes with letter-number designations. By this point, "video handoff" would be in service to facilitate transfer of control responsibility from one FAA controller to another.

Further refinements in data-processing and display, institution of automatic radar tracking and a tabular-display presentation of extensive computer data "on demand" would follow.

Copies of the full report will be available later this year. A summary version will be published in September.

* * *

The head of the team that produced this proposed airspace utilization system, Albert Brown, is a 43-year-old government scientist with a varied background. He has been a pilot, submariner, fighter-aircraft controller, college teacher, research physicist and military systems engineer.

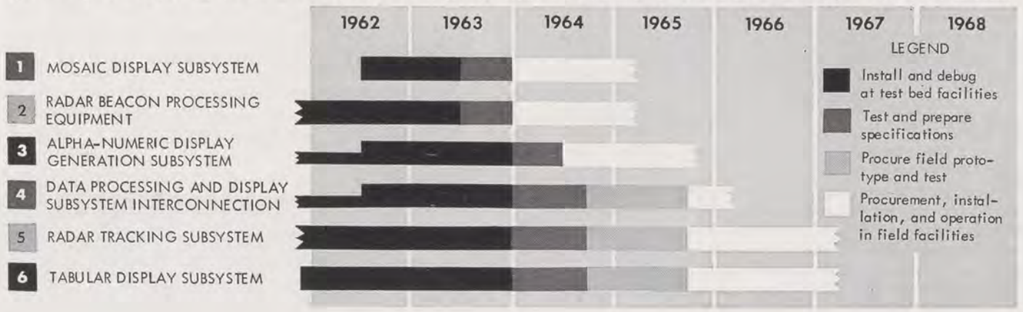
Brown graduated from Wesleyan College, Middletown, Conn., in 1940 with a bachelor's degree in mathematics and physics. He got his license as a private pilot that year.

During the war, he served in the Pacific with Navy amphibious forces, in submarines and as Officer-in-Charge of the Pacific Fleet Radar Center at Pearl Harbor. His duties included engineering, electronics and combat air controlling.

Brown returned from the war to Columbia University to teach and study physics. He earned a master's degree in 1950, also took part in advanced research projects for AEC and the Office of Naval Research.

In 1952, Brown left Columbia to join the Bell Telephone Laboratories, New York, as a systems engineer. Among programs he worked on during seven years at Bell were the development of the Air Force's Semi-Automatic Ground Environment (SAGE) system and the design of aviation communication systems. He joined FAA in 1959.

System Design Team's proposed plan calls for increase in traffic control automation, installation of new hardware according to step-by-step schedule.



Airport Engineering, Crop Dusting Discussed

Proposed plans to simplify airport engineering criteria and provide new licenses for agricultural fliers were discussed last month by FAA Administrator N. E. Halaby.

The revised airport engineering criteria could simplify requirements for smaller airports to the point where nearly 10,000 airfields could be developed at the same cost as the 3,123 airports now included in the five-year National Airport Plan.

The proposed aerial applicators' license would be tailored to their operations. It would be issued for an indefinite term and would cover both private and commercial agricultural applicators.

Halaby discussed the plans at the International Flying Farmers' annual convention in Seattle.

In applying the new airport engineering criteria to an airport planned for a small Pennsylvania community, Halaby said, it was found that the airport could be built with the same 3,200-foot paved runway, with adequate lighting and with no compromise in safety for $116,000—or $400,000 less than the $516,000 estimate based on current FAA criteria.

"We investigated," Halaby said, "and found that the town fathers were only too well aware that they didn't need a half-million dollar airport. In fact, they complained long and loud that the FAA engineers were forcing a Cadillac airport on them when what they wanted was a stripped-down compact."

The alternate study resulted and as a consequence "the significance of these proposed new criteria to general aviation can be enormous," he stated.

The proposed new operator's certificate for private and commercial agricultural applicators resulted from dissatisfaction on the part of both FAA and the industry with the fact that the present certificate of waiver is "authorization for non-compliance with regulations."

Under the proposal, the new operator's certificate would be of indefinite duration and commercial applicators could operate with it throughout the U. S. Those with good safety records presently holding waiver certificates would be granted new certificates automatically. New applicants would have to demonstrate their knowledge of the agricultural materials used and how to apply them, and would be subject to flight demonstrations of such maneuvers as flareouts, swath runs, pull-ups and turnarounds.

The commercial certificate would either specify authorization for flight over non-congested areas only, or over both congested and non-congested areas.

Applicants for private certificates would have to demonstrate similar knowledge and ability but could not fly for compensation or hire and would be limited to flights over non-congested areas of their own property, property they leased or where they had an interest in the crop.

In the same speech, Mr. Halaby also:

- Urged flying farmers to develop limited instrument ability, noting that 25,000 Blue Seals have been issued and that AOPA's 360-degree clinics have graduated some 800 pilots with 3,000 hours of dual instrument instruction;
- Asked for comments from flying farmers on proposed liberalization of maintenance regulations to permit owners to perform corrective as well as preventive maintenance on their own aircraft, possibly through issuance of a "basic mechanic's certificate." Send comments to FAA General Aviation Maintenance Branch, Washington 25, D. C.

BUSIEST AIRSPACE IN THE U.S.

Trying to guess the area of greatest air traffic density over the United States, most people would pick New York, Los Angeles or Chicago.

The answer is none of these. The Pensacola, Fla., area leads all the rest. On a typical busy day last year, according to a recently completed FAA study, there were 113,656 minutes of military flying, 469 minutes of air carrier flying and 3,072 minutes of general aviation aerial activity there.

The figures dwarf the number two and three areas in air traffic density. The second most densely traveled piece of airspace—the Los Angeles-San Diego area—showed 25,051 minutes of military flying, 1,336 by air carriers and 25,518 by general aviation aircraft.

New York was the area of third heaviest density, with 15,668 minutes of military flying, 12,450 by air carriers and 35,672 clocked by general aviation.

Some 96 percent of the aircraft over the Pensacola region are military, mostly Navy planes from a training base complex and Air Force aircraft operating out of two bases.

Hangar Flying Session

FAA Administrator N. E. Halaby will hold a hangar flying session for general aviation at Detroit's Willow Run Airport on Saturday, Sept. 15 from 1-4 p.m.

Contact the tower on 121.3 mc and ground control on 121.9 mc for both transmitting and receiving. The tower will receive only on 122.6 mc and 332 kc. Pilots also may contact Willow Run approach control from about 20 miles out on 123.7, 124.9 or 125.15 mc for initial traffic information.

Ample parking facilities for aircraft will be available. The hangar session will be held in the General Motors hangar at the southwest corner of the airport.

New Ft. Worth-Dallas Center Dedication provided these two youths with thrill of sitting at flight progress board and overhearing airliner transmit position report. More than 7,000 attended open house.

Traffic Control and Air Defense Integrated at 3 SAGE Centers

By next fall, the Federal Aviation Agency will have plugged a long-existing gap in radar coverage of the north-central part of the Nation, known as the Northern Tier.

The expanded radar service will result from a recent agreement between Administrator N. E. Halaby and Assistant Secretary of the Air Force for Materiel Joseph H. Imirie, representing the Department of Defense, for joint use of three SAGE (Semi-Automatic Ground Environment) Direction Centers at Great Falls, Mont., and Minot and Grand Forks, N. D.

Coverage will extend over almost all of Montana, North Dakota and parts of Minnesota, South Dakota, Wyoming and Idaho.

Concurrently, the present FAA Great Falls Air Route Traffic Control Center will be phased out. Its operations will be absorbed by the Great Falls SAGE Direction Center. Other adjustments will be made in the present areas covered by FAA Centers at Minneapolis and Denver and portions of the airspace under their jurisdiction will be transferred to the SAGE Centers at Grand Forks and Minot, N. D. The FAA Centers at Minneapolis and Denver will remain in operation.

Radar surveillance for air traffic control over the Northern Tier states is another step in the Agency's continuing drive to enhance safety through improved services at the higher altitudes and to speed the implementation of FAA's national positive control program to cover the continental U. S. above 24,000 feet. Positive control service depends on the use of radar for both surveillance and identification of aircraft.

The use of the three SAGE facilities for air traffic control will not affect military staffing nor the air defense mission for that section of the country. Under the FAA/DOD joint use agreement, the ATC/Air Defense missions will be carried out independently in separate operating rooms. FAA will reimburse the Defense Department for utilities and services required for air traffic control.

From 150 to 180 controllers will be needed—comparable to the size of a traffic control staff required to service a single Center in an area of equal size. Controllers will be recruited on a volunteer basis from among present air traffic control facilities.

Certain modifications to the SAGE system will be made for air traffic control purposes. These will take about a year.

On Sept. 30, FAA programs and facilities in Montana will be transferred from the Western Region to the Central Region, bringing all FAA Sage Center activities under one jurisdiction.

Replacing Lost Certificates

Lost a certificate? Submit a brief statement of the circumstances surrounding the loss, exact name that was on the original certificate, your grade, ratings and date of issuance. Enclose a check or money order for $2 ($4 for both pilot and medical replacement) payable to the FAA.

If you're in a hurry, send a prepaid telegram and telegraphic money order and FAA will telegraph a replacement certificate until a written duplicate can be issued.

For both pilot and medical certificate, send the facts to the Chief, Airmen Records Branch, FAA, Home State Life Building, 621 Robinson Avenue, Oklahoma City. Correspondence concerning medical certificates only should be sent to the Civil Air Surgeon, FAA, Washington 25, D.C.

ESTES NAMED ACTING CIVIL AIR SURGEON

Dr. Hilliard Estes was named Acting Civil Air Surgeon of FAA's Aviation Medical Service last month, replacing Dr. James L. Goddard who returned to the U. S. Public Health Service on September 1.

Dr. Goddard, the Agency's first Civil Air Surgeon, came to FAA from the Public Health Service in July, 1959. He has been appointed Chief of the Service's Communicable Disease Center in Atlanta, Ga., where he will hold the rank of Assistant Surgeon General.

Dr. Estes joined the FAA in July, 1960 as Director of the Civil Aeromedical Research Institute in Oklahoma City. He was transferred to Washington in July, 1961 as Chief of the Environmental Health Division of the Aviation Medical Service and was later designated Special Assistant for the Technical Staff.

A native of St. Joseph, Mo., Dr. Estes received his M.D. from Harvard Medical School and later earned a degree as Master in Public Health from the Harvard School of Public Health.

As Acting Civil Air Surgeon he will be responsible for the mental and physical fitness of airmen and air traffic controllers, developing medical standards for airmen and conducting aviation medical research on the physiological and psychological limitations that may affect man in flight.

Exclusive Rights Policy Clarified at Federally-Financed Airports

An Agency policy with respect to the granting of exclusive rights to conduct aeronautical activities at airports receiving funds under the Federal Aid Airports Program has been announced.

This policy was reiterated by FAA following complaints from several fixed base operators that some public airports were permitting exclusive rights for fixed base operations and other aeronautical activities at airports receiving Federal funds.

Administrator N. E. Halaby said, "It is the Agency's policy to regard the granting of an exclusive right for aeronautical activities at any airport receiving Federal funds as contrary to the existing laws. Applicants for Federal airport funds will be expected to adhere to this policy."

The one exception permitted by an anomaly in the law is the exclusive right to sell gasoline and oil which the Surplus Property Act permits on surplus property airports. Halaby indicated that legislative action may be necessary to eliminate this inconsistency and provide a uniform policy for all airports.

To provide guidance for airport operators in interpreting laws applicable to public airports, the FAA policy states:

1. The opportunity to engage in aeronautical activities should be made available to more than one party. Consideration, however, should be given by airports to circumstances that might make such a policy unreasonable to enforce, such as insufficient ground area or insufficient volume of business.

2. Opportunities to qualify for participation by more than one operator should be available on fair and reasonable terms without unjust discrimination.

3. Applicants for grants for Federal airport funds will be required to agree that they will comply with applicable laws and policies of the Agency.

4. Recipients of prior grants of Federal funds who do not now conform to these laws should do so as soon as reasonably practical.

5. Hazards to safety in normal activities will be the basis for exception.

6. Where there is no evidence of interest by other parties, the presence of only one activity on an airport will not create any assumption of lack of compliance.

SAILPLANE ENTHUSIASTS HOLD SOARING CHAMPIONSHIP MEET

During air show held prior to championship soaring contest, a double-tow takeoff was demonstrated.

Thirty-five pilots from nine states and one foreign country chased cumulus clouds and "dust devils" last month in quest of a soaring championship trophy.

Winner of the 29th National Soaring Championships held at El Mirage Field, 55 air miles northeast of Los Angeles, was John Ryan, Scottsdale, Ariz., who scored 6,939 points out of a possible 8,000 in eight days of competition. He was awarded the Richard C. Du Pont Memorial Trophy and a chance at participating in the International Soaring Championships in Argentina next year.

Sailplanes were towed to an altitude of about 2,000 feet by powered craft and released. Pilots then flew various speed and distance events during the competition. Highly sensitive rate-of-climb instruments and cumulus clouds helped fliers detect thermals—rising air currents. "Dust devils"—small cyclone-like circulations of air that raise dust off the ground—also were valuable indicators.

Crews in autos maintained radio contact with pilots and followed them across the desert, sometimes for 200 miles or more.

FAA played an important role in assuring air safety. The Supervising Inspector for the Ontario, Calif., General Aviation District Office monitored operations during the meet. All sailplanes in the contest carried a valid, recent FAA Certificate of Airworthiness. In addition, FAA arranged to reserve airspace for an air show that preceded the competition.

Soaring in the U. S. dates back to 1883 when John Montgomery sailed 600 feet in a home-built glider. The sport, which now attracts more than 5,000 FAA-certificated glider enthusiasts, got its first impetus in the late twenties and early thirties.

The Soaring Society of America, formed in 1932, has a membership of about 4,000. There are more than 650 sailplanes and about 120 soaring clubs in the United States.

Instrument panel of modern sailplane at meet.

Industry Executives Get Taste of FAA Operations And Responsibilities in Unique Exchange Program

Fourteen electronics engineering executives are back at their industry jobs after five-weeks of studying FAA operations and absorbing Agency know-how.

These men, all representatives of firms manufacturing the highly specialized equipment used by FAA in air traffic control, communications and navigation work, returned with a better practical understanding of FAA needs.

The project was the first step in a mutually beneficial plan that eventually may lead to a regular exchange of technical and administrative personnel.

The program began in Washington. One week was spent getting the over-all picture of Agency activities—flight standards, air traffic control, research and development, facilities, materiel, etc.

This was followed by three weeks of intensive work at FAA's Aeronautical Center, Oklahoma City, covering the intricacies of air traffic control—procedures for tower and en route control; radar, IFR and VFR flying; communications and weather reporting facilities; installation, operation, maintenance and flight inspection of navigation aids.

The executives then returned to their home companies and later reported to FAA's National Aviation Facilities Experimental Center (NAFEC), Atlantic City, N. J., for a week's orientation in FAA research and development activity.

As a part of their FAA orientation, business executives studied terminal radar control procedures.

Boeing 720 is used for training FAA Air Carrier Inspectors.

FAA'S WORKING AIRCRAFT FLEET

Douglas DC-7 used for automatic landing tests, maintaining pilot proficiency.

The tools needed by FAA to operate and maintain the 219,000 miles of Federal Airways range from screwdrivers and voltmeters to more than a hundred airplanes —everything from light planes to 600-mph jets.

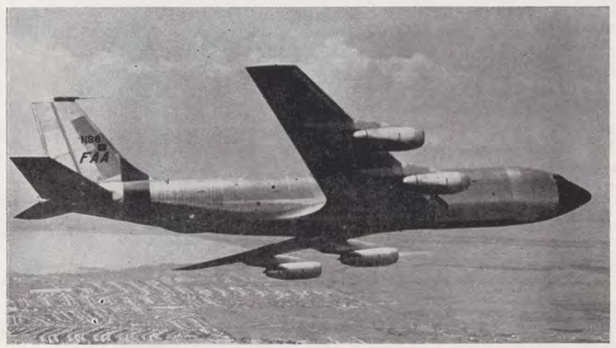
These airplanes are used to check the accuracy of more than 700 omni radio ranges and nearly 200 instrument landing systems, plus 5,000 holding patterns, 55,000 intersections and other flight procedures. They also are used to familiarize FAA safety inspectors with planes on which they will be checking out licensed pilots.

In a recent 12-month period, these aircraft—59 owned by FAA, 50 loaned by the military services and 10 leased from manufacturers—flew nearly 125,000 hours. About 62,000 of these hours were logged in flight checking; 13,000 in training activities; 3,500 in logistics; 41,000 in job performance and proficiency; 5,000 in research and development.

Douglas DC-3 checks flight facilities at low-level altitudes—under 12,000 feet.

Grumman F9F. Used in ATC research at jet altitudes and for landing procedures.

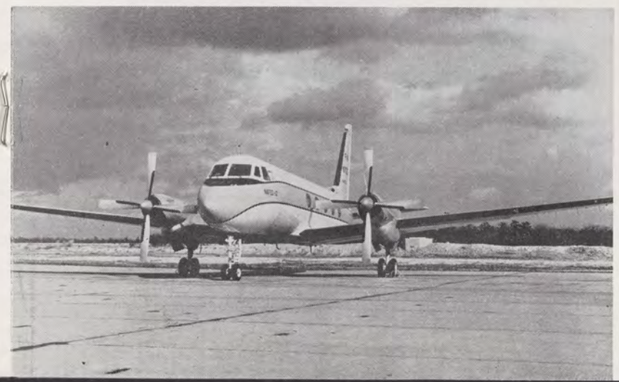
Piper Tri-Pacer. For experimental use and to test general aviation transponders.



Boeing C-135 for high altitude (above 25,000 feet) flight checking of navaids.

Another flight inspection aircraft, Convair 440 prop-jet, based at Aero Center.

Grumman Gulfstream used in experiments, job proficiency, administrative work.



Lockheed Electra used for training air carrier inspectors at Aeronautical Center.

HOME-BUILT PLANES CONVENE FOR ANNUAL FLYING FEST

The do-it-yourself segment of aviation, represented by some 200 home-built and antique airplanes, converged on the Greater Rockford (Ill.) Airport last month for the Experimental Aircraft Association Tenth Annual Fly-In Convention.

EAA is a 13,000-member, world-wide organization of sporting pilots founded in 1953 to promote aircraft safety and education and to encourage and assist private aircraft builders, designers and fliers in this challenge to man's inventiveness.

In encouraging this novel aviation activity, the Federal Aviation Agency has developed special regulations to assure operational safety. Working closely with its members, FAA Flight Standards Inspectors determine from the outset that amateur-built aircraft are designed and constructed—and then maintained and operated—in accordance with safety standards. Air traffic control specialists assist by providing the airspace necessary for the required 50-75 hours of flight testing in a designated area.

FAA set up remote tower on field where controllers with portable radios in contact with regular tower coordinated normal traffic with fly-in activities.

Mignet Flying Flea with 40-hp Continental engine, built by Frank Easton of Salem, Ohio, has unusual tail with horizontal stabilizer set forward.

Handiwork of proud do-it-yourselfers lines the field of Greater Rockford (Ill.) Airport where Experimental Aircraft Association held annual convention.

VAST NETWORK AIDS LOST PILOTS

With the flip of the radio switch, a lost pilot is always within sound of the voices of some 18,000 FAA controllers and flight service specialists who are trained to lead an aerial assist.

Supporting their efforts is an extensive network of electronic systems. There are about 700 VORs and VORTACs throughout the air navigation system to help a pilot fix his position in the airspace. In addition, there are 961 air/ground communications channels for pilots to talk with the 36 Air Route Traffic Control Centers.

The system also embraces 49 long range radars, 68 airport surveillance radars, 28 precision approach radars, some 300 airport lighting systems, about 200 instrument landing systems, more than 200 approach control facilities, almost 260 towers and combined station/towers, and 340 Flight Service Stations.

Helping a lost pilot find his bearings is generally a matter of routine for FAA's Flight Service Station specialists. When the plane's navigation equipment, for example, has quit, the station may ask the pilot to describe distinctive landmarks beneath him—bridges, rivers, lakes, open-air theaters, race tracks, smoke stacks, factories, etc. A station specialist knows his area thoroughly. Often, all the station man needs is a description of a prominent terrain feature to put the pilot back on course.

Should the plane's navigation equipment be in order but the pilot has difficulty orienting himself because of severe turbulence, lost maps or other causes, the station man can still help by serving as the pilot's co-pilot or navigator from the ground. The flight service specialist will plot the readings the pilot radios to him from the cockpit.

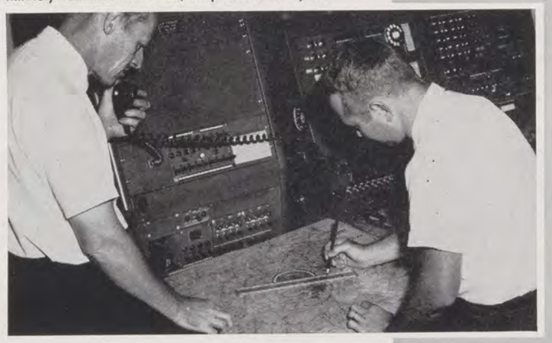
Orientation service for lost pilots goes beyond the station. In an area covered by FAA or military radar or DF (direction finder), the station will alert the other facilities after being contacted by a lost pilot. When DF is used, an Air Route Traffic Control Center, which serves as the DF net control unit, plots the cross bearings obtained by other DF stations receiving the pilot's transmissions, generally in the form of a voice count. The pilot's fix will then be relayed to him by the station initially contacted.

If the lost pilot is within radar range of a center or an approach control facility, the facility will instruct the station to ask the pilot to make an identifying maneuver. The radar facility will then spot the location of the lost aircraft, relay the information to the station and the station will give the pilot a course to take him back on his route. Radar will continue to monitor the plane as long as necessary.

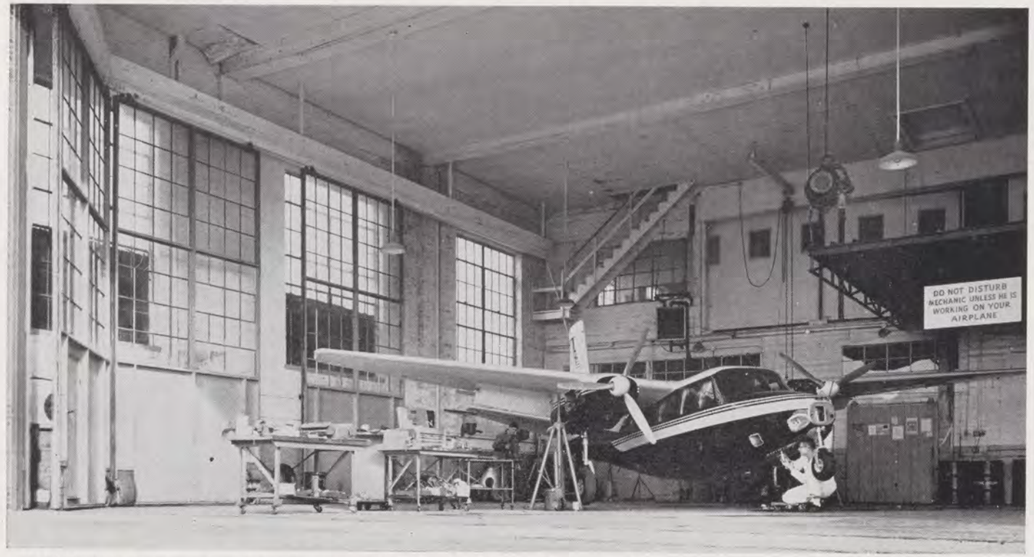
Sometimes the Flight Service Station will enlist the help of another plane the station knows is in the area to help the lost pilot. In such a situation, when the two planes have sighted one another they can both switch to UNICOM frequency (122.8 or 123.0 mc. if in the area of a tower-equipped airport) and talk directly to one another. The station acts as intermediary in facilitating the communications change.

The stations are there to serve. Pilots should have no reluctance to let them know they're in trouble.

Trained personnel at Flight Service Station, intimately familiar with area, help orient lost pilot.



High Standards Characterize FAA-Certificated Repair Stations



Well-lighted, spacious repair stations with proper tools, manuals and competent personnel are some of the requirements for certification by FAA.

The steady growth of FAA-certificated repair stations—from an average annual increase of 74 to 100—reflects the continuing demand for airplane maintenance of the highest standards.

As of last July, there were 940 certificated repair stations, compared to 347 in existence seven years ago.

These repair stations vary in size from the small shop specializing in instrument repair to the multimillion-dollar establishment capable of complete maintenance on airline equipment, complex executive airplanes and lightplanes used by general aviation.

Despite the disparity in size and specialty, these repair stations have one attribute in common: All have been certificated by the Federal Aviation Agency to perform general and specialized maintenance on airframes, powerplants, propellers, instruments and radios.

The certification process begins with a request to the local General Aviation District Office. An FAA maintenance inspector—one of about 250 throughout the country—is assigned to check the repair facility to see if it conforms to the exacting standards established in the Civil Air Regulations.

These comprehensive regulations cover the qualifications of personnel in charge, the physical layout of the repair shop, the use of proper tools and technical manuals, proper record-keeping and a careful inspection system to assure that work has been done properly and completely before an airplane is released for service.

When the FAA inspector is satisfied that all of the requirements have been met by the applicant, he issues a repair station certificate. And in order to assure continuing high standards of workmanship and procedures, an FAA inspector makes periodic visits to certificated repair stations and performs a complete re-inspection every year.

Left to right, mechanics at certificated station checking engine on corporate PBY, installing switch on converted C-47, bench-testing radio equipment.

Hurricane Season prompts review of safety precautions

Hurricanes and other high winds can't be prevented, but aircraft operators and pilots can start making plans now to protect their airplanes in a storm's path.

At this time of year, with the advent of the hurricane season, FAA urges several measures to prevent damage or destruction of aircraft during high winds. The hurricane season reaches its peak from August through October, although big blows occasionally occur in other seasons, including winter and spring.

The hurricane area extends from Brownsville, Texas, east along the Gulf Coast to the Atlantic Ocean and up the Atlantic Coast to Maine. Aircraft operators throughout this large area are urged to be particularly alert for such storms. The same precautionary measures applying to aircraft in hurricane areas also hold true for any high winds in other parts of the country.

The most effective step is to do as the military services do—fly the aircraft out of the predicted hurricane area. Key to this, of course, is having advance notice of the approaching storm. Sometimes advance warning is impossible, but frequent checks with the Weather Bureau will give pilots the jump on many storms and a flight of a few hundred miles or less may save the airplane.

If for some reason you can't get the aircraft out of the storm area in advance, head it into the wind and tie it down. Sounds basic, but there are still plenty of pilots who fail to do it. Nor is just tying it down enough. The forces you are combatting are lift, downloads, drag and torsion.

Here are a few suggestions:

Put lift spoilers on the upper surfaces of the wings. An airplane which becomes airborne at 60 mph is going to go some place when the wind passing over its surfaces hits 90 mph or more. If the craft is tied down, either the ropes may break or the wings rip off. Spoilers will help prevent this.

Shot-filled bags, such as the military services sometimes use, make good spoilers. The bags are rather long and narrow—like large sausage rolls. Sand or dirt can serve very well and if bags aren't available, even two-by-four lumber or anything that spoils the air flow will help. A two-by-four frame that slips over the leading edge of the wing may be constructed in advance and held ready for the next storm. The two-by-fours or similar material should be padded to avoid damaging the aircraft. Spoilers also should be placed on the propeller.

Secure the elevators in a down position with the stick forward. Secure the tail to tie-downs, leaving enough slack in the line to allow the tail to be free to rise a few degrees beyond the zero lift angle of attack of the wings. Place chocks *behind* the wheels. When the eye of the storm passes, bear in mind that the wind is going to do a 180 degree switch and you'll have to do the same with the aircraft.

Pilots who get caught so short that they are unable to tie down their aircraft are advised to get in the plane and "fly" it at a negative lift angle until help arrives. More than one plane has weathered severe winds in this manner until the man at the controls could obtain help to tie it down or move it to a sheltered area.

Remember, the best defense from a hurricane is to fly the aircraft out of the predicted storm area. If impractical, or impossible, head it into the wind and tie it down, using spoilers.

Chair-Borne "Pilots" Help Solve Air Traffic Problems

Some 150 FAA "pilots" have logged 4,160 hours of flight time in the past year without leaving the ground.

They are the operators of air traffic simulators at the Agency's National Aviation Facilities Experimental Center (NAFEC) near Atlantic City, N. J.

These extensive facilities at FAA's primary test center are used to investigate specific air traffic problems, study proposed system improvements, and examine route structures and procedures in en-route and terminal areas. They also are used to survey the effects of proposed airports on the traffic picture and to check out new concepts and hardware.

The NAFEC air traffic simulation studies meticulously reproduce actual conditions. "Pilots", up to sixty in a single problem depending on equipment used and problem needs, sit before rows of instrument-panel consoles in a large simulation room. In front of each is a script tailored to the project at hand, telling him—or her—how to "fly" and when to say what into his radio transmitter.

The pilot flies his plane by manipulating panel controls. A spot of light representing his "aircraft" appears before him on a TV-like screen, in many cases superimposed over an airways map. He can govern altitude, heading, speed, climb and dive rates with his panel instruments. He judges his position in the airways by the screen display.

The signals from these consoles are fed to simulated search or Ground Controlled Approach radars. Target blips representing the aircraft being flown at the consoles appear on radar displays just as actual aircraft do in flight operations. Experienced FAA controllers man radar scopes and control stations in a simulated control facility separate from the pilot-console room but under the same roof.

Pilots and controllers maintain radio communications by normal air/ground/air procedures as if, in reality, they were flier and air traffic controller in day-to-day operations. The pilot calls the controller in accordance with his script. The controller assumes control over the plane as appropriate, issues directions to the pilot in line with display information and the requirements of the problem being simulated.

Two of the three simulation systems, the Models A and B developed by Aircraft Armaments, Inc. of Cockeysville, Md., have additional data collection and reduction features. In effect, these data computer-centered systems "tape" problems from start to finish. Findings in problems can thus be analyzed and re-analyzed afterwards. The problem can also be automatically played back from start to finish as many times as desired.

The older and less complex TDC simulation system, developed more than a decade ago at the former Civil Aeronautics Administration's Technical Development Center, Indianapolis, Ind., does not include this data-recording feature.

Year after year, air traffic problems and questions are fed through these simulators. Solutions, based on simulation findings, are fed back to the aviation world. These problems have covered areas ranging from New York-Idlewild to the Berlin air corridors, from proposed pictorial navigation displays to radar hand-off techniques.

Typical simulation studies, which topped 20 in number last year and required 4,160 hours of simulator time, have covered:

- Instrument Flight Rule operations in the San Diego, Calif., area.
- Operational procedures for turbojet traffic patterns.
- En route traffic systems for the Detroit-Chicago region.
- Terminal area system design.
- Evaluation of display procedures in air traffic control.
- Traffic-handling at Anchorage.
- Terminal and en route traffic in the Frankfurt, Germany, Flight Information Region.
- Helicopter operations.
- Maximum utilization of the Berlin air corridors.
- Controller work loads.
- Terminal area sequencing control at airports, including New York's Idlewild International.

Directly ahead today for the United States aviation community is an area of accelerated evolution in air traffic hardware, techniques and systems. These years of change will be busy ones for NAFEC's air traffic simulators.

Operators at consoles of target generators used in simulated air traffic control, a continuing traffic control study conducted at FAA's test facility.

Letters to the Administrator

FAA

FAA Aviation News welcomes comments from the aviation community. We will reserve this page for an exchange of views. Please keep them brief. No anonymous letters will be used, but names will be withheld on request.

• Sports Jumping

We have gotten word that the FAA plans to vote in September on regulations for parachute jumping and I am writing you as a representative of the Arizona Parachute Association to ask that FAA not kill our sport with regulations against night jumps or water jumps. Since the FAA Administrator has made jumps himself, you can see our point when we say that parachuting is one of the world's finest sports.

Our jumpers are among the very best. We follow PCA rules. We make safe water jumps, safe night jumps and safe exhibition jumps. We feel that an agency governing a young sport like ours could kill it.

Robert Sauer
Tucson, Ariz.

Mr. Halaby agrees that parachuting can be one of the world's finest sports, and has, on many occasions, commended well-run, well-organized and responsible sport parachuting organizations. FAA's concern is for those who are not responsible, and for the safety of those who may be jeopardized by their actions. The Agency certainly will do what is in the best interest of all concerned.

• Electrician Rating

Has the FAA considered adding an electrician rating to the mechanic license? With the increasing complexity of modern aircraft and the advent of high power three-phase AC primary power systems, electrical maintenance has become a specialty.

The electrical sections of the present airframe and powerplant ratings are still adequate for light aircraft but they fall far short of modern large aircraft technology. Airlines and maintenance organizations use electrical specialists rather than A and P mechanics to perform electrical maintenance.

The further breakdown of the mechanic license to an electrical rating has as much validity as the airframe and powerplant breakdown, and would be to the advantage of all concerned. It would give the FAA jurisdiction over the qualifications and competence of aircraft electricians that it does not now have. It would afford a yardstick by which to judge job applicants. It would also be to the advantage of the electrician himself. Since licenses are required of most supervisory personnel, it would greatly increase his opportunities for advancement.

Jesse Ranney
Inglewood, Calif.

The area of mechanic certification is under continuing review by the Federal Aviation Agency. At present, it has not been established that specialized mechanic ratings are necessary to insure air safety. Certificated repair stations and air carriers, however, can recommend personnel for certification as repairman. The Repairman Certificate does allow specialized ratings.

It is often through comments of this nature that FAA is made aware of the needs and problems of the aviation community. This letter will be retained for mechanic certification review.

• Contact Lenses

May I have the FAA bulletin which spells out the regulations that forbid the use of contact lenses for a commercial license?

R. E. Commerce
Arlington, Va.

There is no bulletin covering this. FAA specifies that contact lenses will be approved only for Class III airmen, with the exception that a Class II airman with normal vision in one eye, and absence of a natural lens in the other because of a cataract, may have the eye involved fitted with a contact lens.

In all areas where contact lenses are approved, it is necessary for the applicant to submit a detailed report from his eye doctor concerning a number of specific items considered important in evaluating the wearing of contact lenses.

Part 29 of the Civil Air Regulations refers specifically to "glasses" as the source of correcting substandard distant vision. This specification has been in existence for many years and clearly does not anticipate the wearing of contact lenses. It will remain in effect while current and planned medical studies are conducted to determine whether it should be altered.

• Additional Student Training

I am fairly new at flying—three years and approximately 700 hours—some single, some twin. I do mostly cross-country in my work of rodeo announcing. I have no problems with FAA and am on your side.

My gripe is a serious one. It almost killed me a number of times. I do not think a student should be permitted to go anywhere until he has had at least 10 hours instrument time. He should not solo until he has had a check ride from an FAA inspecor to prove he can recover from a spiral.

It is my opinion that entirely too many hapless souls solo before they should, buy a plane and take off for some place where they should never go. I scared myself a couple of times after my solo effort. I actually didn't have the foggiest notion how to recover from a spiral or know what the omni was supposed to do or how to get anywhere and back. It is wrong to turn people loose too early; when they solo there is no law to stop them. There should be.

Pete Logan
Medford, Ore.

FAA is now working on flight instructor requirements and procedures intended to assign more responsibility to certificated flight instructors, and thus provide better flight training and student pilot supervision.

• Pilot Certification

I wish that you would give some consideration to a method of permitting senior flight instructors a rating whereby they might give flight examinations to qualified students. If a sound program of certification by flight schools were instituted it could lower your operating costs and allow examiners more time to do other work.

Rawdon K. Lowe
Brea, Calif.

The system you suggest is now in effect. Qualified flight instructors are designated as pilot examiners, authorized to conduct flight tests and issue temporary pilot certificates as representatives of the Administrator at locations where their services are needed to provide reasonable service to the public. In addition, certificated flying schools may qualify for and obtain examining authorizations which permit them to conduct the certification flight tests of their graduates.

• Instrument Competence

Can't you possibly institute a law that will protect those who hire a charter, who look to you and the CAB to protect their lives, and who have a right to feel that a pilot with 20 years experience can bring them in safely regardless of weather? I am a part-time charter pilot and the number of fatal accidents on charter flights resulting from weather takes money out of my pocket. It undermines the faith of those who might hire me and my airplane.

The fact that a man has a valid ticket means nothing. Let's get legislation under way so that non-instrument rated pilots cannot charter more than 50 miles from base, and that a man with an instrument rating must log at least six hours actual IFR a year. I know they will scream, but your duty to our citizens is to protect them.

John H. Greene 2d
Rangeley Lakes, Me.

Current instrument flying competence is becoming increasingly important to the safety of cross-country flying. In the near future a draft release of proposed rulemaking concerning air-taxi operations will be issued. It will contain more specific and realistic instrument competence requirements for air-taxi and charter pilots.

Both of the accidents reported in the clippings you sent involved personal flights by private pilots. In one, the pilot was part owner of the airplane involved; in the other, the pilot had rented the airplane from a commercial operator for a personal trip.

Going over his check list of pilot shortcomings, cartoonist Robert Osborn this month comes up with the all-too-common failing depicted on the next page.

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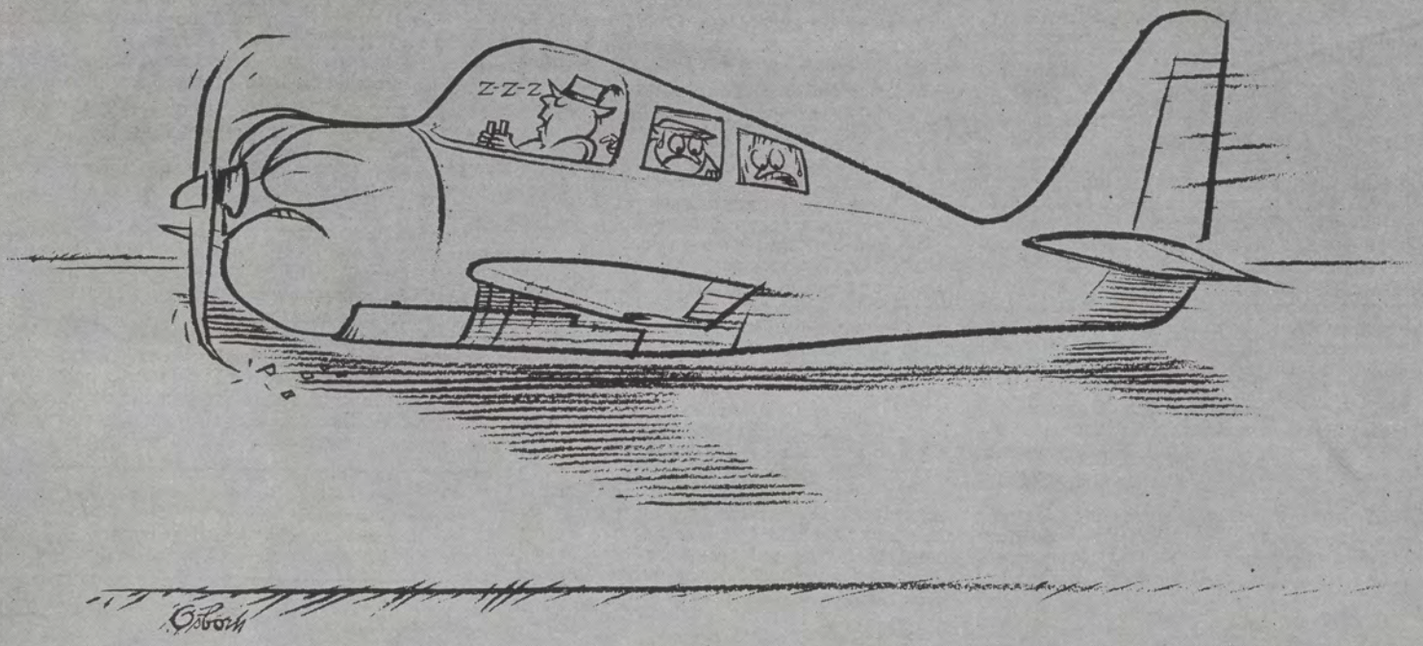
Gear-up landings are embarrassing...dangerous...costly



Always Use Your Check List!