

326

NORTH DAKOTA AVIATION NEWSLETTER

STATE DEPOSITORY DOCUMENT

Vernon M. Baltzer, Editor

STATE OF NORTH DAKOTA



COMMISSIONERS:
WARD WHITMAN, ROBINSON
CHAIRMAN
JACK K. DANIELS, WILLISTON
VICE CHAIRMAN
ALFRED C. PIETSCH, MINOT
SECRETARY
JOHN D. ODEGARD, GRAND FORKS
NICHOLAS F. SCHUSTER, FARGO

Harold G. Vavra
Director

FEBRUARY, MARCH 1975

NORTH DAKOTA LEGISLATIVE BILLS RELATING TO AVIATION

The following bills have been introduced in the 1975 Session of the North Dakota Legislature relating to aviation:

House Bill No. 1477 - Permits any person that furnishes farm chemicals, fertilizer or does custom aerial application of agricultural chemicals for a farmer, to have a lien upon the crop produced as security. The bill passed the House and was reported out of a Senate committee to be killed. Committee report was reversed on the Senate floor vote. This bill is now up for a final vote.

House Bill No. 1506 - Appropriates \$63,000 for a state-wide Phase one Commuter Airline basic needs assessment study to determine whether there is a basic need for a state-wide commuter airline system. Phase two study appropriates \$121,300. in federal funds which will specify the N.D. cities to be served and overall financial aspects of a commuter air service system. Phase two study will make a recommendation to the 1977 Session of the legislature whether a pilot demonstration commuter airline system should be undertaken. The bill passed the House.

House Bill No. 1549 - Enacts an additional 2% excise tax on the sales price of aviation gasoline used by aircraft with the proceeds to be used by the State Aeronautics Commission to match with secondary public airports for improvement projects. Passed the House.

House Resolution No. 3061 - Directing the N.D. Legislative Council to study commercial airline airports in North Dakota to determine the feasibility of coordinating their development so that the costs are shared by those who benefit from such development. Passed the House.

House Bill 1060 - Creates a state-wide weather modification program. Creates a weather modification board as a division of the North Dakota Aeronautics Commission. Provides state matching funds with county weather modification authorities and provides that the State Weather Modification Board shall let all contracts for weather modification, using state funds matched with county funds. The bill appropriates \$654,760. for the two years beginning July 1, 1975 for hiring a professional staff and for state matching funds for providing assistance to county weather authorities. Bill passed the House and has been heard by the Senate Natural Resources Committee with a due pass recommendation.

Senate Bill No. 2060 - Provides for the licensing of pesticide dealers and all commercial ground and aerial applicators and certification of all applicators, including farmers, as to their knowledge of restricted use pesticides. Senate Bill 2060 is intended to comply with a federal law enacted by Congress which requires agricultural states to provide a certification program for use of restricted pesticides by all applicators. Passed the Senate and is being amended in the House.

Senate Bill 2061 - Amends the present state law relating to the requirement for claimants to file a report of loss through spraying by aircraft to make the law apply to all applicators of agricultural chemicals, including commercial air, ground and private farm applicators. The reports of loss will be filed with the agriculture commissioner in place of the Aeronautics Commission. Passed both the Senate and House and sent to the Governor.

Senate Bill No. 2491 - Would ban the aerial application of agricultural chemical 212 tordon or 22K tordon. Senate bill 2491 killed in the Senate.

* * * * *

TOLL FREE CALLS FOR WEATHER BRIEFINGS

The Grand Forks FAA Flight Service Station announces the following: "****Pilots may now call toll free for weather briefings, filing of flight plans, etc., to the Grand Forks Flight Service Station from the following locations: Cavalier and all communities on the Polar Rural Phone Exchange. Dial '0' and ask for Zenith 1100. pilots in the Pembina area dial '0", and ask for Zenith 0792****". Information furnished by R. L. Cooley, Grand Forks FAA Flight Service Station.

* * * * *

THOSE PERENNIAL PERSISTENT USER CHARGES

Now that the 94th Congress is in session, the aviation community is again plagued into defending itself against unreasonable and absorbent user charges. The push and prodding of the "Office of Management and Budget" through the Department of Transportation, down the chain through the FAA, is again manifesting itself by what seems to be an axiom of the Land of the Potomac, in that "if there is any money around, ways will be devised to get it spent." Reference is being made to the unspent portion of the Airport-Airways Trust Fund and the concerted effort to divert funds into the Federal Aviation Administration's sizable operating budget, which for 1975 is \$1,390,000,000. and if you have trouble with zeros, the foregoing is one billion 390 million.

Congress, in its wisdom and with the support of the aviation community, originally set up the Trust Fund to build airports, improve the airways system and do research work. It has also consistently made it clear that, that was its intent and up to now has thwarted attempts of the "Office of Management and Budget" to raid the fund.

The Trust Fund revenue for 1974 totaled 836.1 million, which would of course be easily digested in the voracious maw of the Federal Aviation Administration's burgeoning bureaucracy. Part of the fund has been used, so far as Congress directed, to cover federal airport construction grants, improvements in the airways system and research work. The balance of the revenue of the fund has been held, building up a surplus of \$1.623 billion as of last August 30th.

Trust fund revenue is generated by a 7¢ per gallon fuel tax and an 8% airline ticket tax, civil aircraft use tax, international passenger tax, and also a waybill tax of 5% of tariff.

The Office of Management and Budget has in the past stipulated, that where the federal government provides a service, such as FAA, that the recipient who receives a service above the public at large, shall be assessed a charge. This contention coupled with a cost study delivered to Congress in the fall of 1973 by the Department of Transportation, as directed by the Airport-Airways Development Act of 1970, has been generating the so-called user charges.

It is hard to believe that intelligent and knowledgeable men in the Department of Transportation and in the Federal Aviation Administration could propose such ludicrous proposed user fees as a \$10.00 departure fee at airports providing a FAA radar-equipped traffic control service and a \$5.00 departure fee at airports providing FAA air traffic control without radar support. This is applicable to General Aviation users only and in the next breath, they use an abstract rationale to justify the excluding of touch and go training flights to encourage the continued use of the safest possible environment for training flights and therefore, avoid aviation accidents and fatalities.

Perhaps these intelligent men are really intelligent and have been using the tactics of drawing a herring across their trail so as to diffuse it and condition the aviation community into accepting a compromise.

* * * * *

HAROLD G. VAVRA, DIRECTOR - AERONAUTICS COMMISSION ATTENDS WASHINGTON, D.C. STATE AVIATION OFFICIALS MEETING, MARCH 5TH

Harold G. Vavra, Director of the Aeronautics Commission reports that from information received while attending a meeting of State Aviation Officials (NASAO) and during a joint reception of key aviation Senators and Representatives, that the Department of Transportation-FAA bill to extend or modify the present Airport-Airways Development Act, which expires and ends all monies June 30th, had not been introduced as of the 5th of March. A bill had been introduced though on the 5th by Rep. Dale Milford of Texas as principal sponsor and co-sponsored by Representatives Henderson, North Carolin; Wright, Texas; Clausen, California; Roncalio, Wyoming; Cochran, Miss.; Ginn, Georgia and Taylor, Missouri.

While the Milford bill amends the 1970 act and changes the language and makes direct grants, it contains no user charges and it extends the act over a five-year period. It also is designed to use up all surpluses of the "Trust Fund" over the period. The following is a breakdown of the Milford Bill and what NASAO requested, also DOT-FAA proposed bill.

	Milford Bill	NASAO Requests
1. Total Federal Funding for Airline Airports - -	\$ 425,000,000	\$ 470,000,000.
2. Total Federal Aviation Funding - - - - -	75,000,000	80,000,000.
3. System and Master Planning Grants - - - - -	30,000,000	-----*
Total Annual Amount in Bill - - - - -	\$ 530,000,000	\$ 550,000,000.
* - (NASAO would insert planning funds as a part of each total)		
DOT-FAA Administration Proposed Bill:		
(Also a 5-Year Renewal Act)		
1. Airline Airports - -	\$260,000,000	(\$260,000,000 paid out directly to airline airports on the basis of \$45. per scheduled airline departure with a \$50,000. minimum per airport on annual basis.
Discretionary Fund	50,000,000	(The total amount includes "Master Planning" (NOTE: Administrator's Discretion-ary fund including System Planning
Total	\$310,000,000	(\$50,000,000.)
Airline Airports		
2. General Aviation Airports		
Total - - - - -	\$40,000,000	(\$40,000,000 General Aviation including Master Planning - Divided based on 3/4 on area population and 1/4 on number of registered general aviation aircraft.
No Discretionary Fund		
	\$350,000,000	Total Annual Program

MECHANIC'S REFRESHER SEMINAR TO BE HELD IN BISMARCK, N.D. AT THE HOLIDAY INN
MARCH 18, 19, 20, 1975 -----

The North Dakota Aeronautics Commission along with the Federal Aviation Administration GADO#4 and the North Dakota Aviation Association are sponsoring a 2½ day Mechanic's Refresher Seminar March 18, 19, 20, 1975 at the Holiday Inn, Bismarck.

The program is designed to bring the latest expertise of the General Aviation segment and the working mechanic together. A period has also been included for the renewal of "Inspection Authorizations" of those that may desire to. Chuck Maddox, Van Dusen Aircraft Supplies, who is well-known in the area was very instrumental in securing the commitments of various Tech-Rep's and their Companies to attend.

The meeting has been scheduled to start at 1:30 p.m. on the first day, Tuesday, March 18th at the Holiday Inn so as to allow traveling time to attend the seminar. Any and all Mechanics, whether active or not, are welcome to attend. A good turn out is hoped for as it will determine if subsequent seminars will be held. It is suggested that advance Hotel registration be made by each individual themselves. The FAA, Fargo GADO #4 has made several previous mailings from their mailing list, alerting all mechanics and others of this event and no other notification will be given. Lets see a good turn out in Bismarck. The following is the Agenda and you will note small mini breaks between presentations designed to keep everyone alert.

Tuesday, March 18:

1330 - 1420 - Bendix
1420 - 1430 - Break
1430 - 1520 - Teledyne Continental - Dick Scheffner, Richard Gardner
1520 - 1540 - Coffee Break
1540 - 1630 - Minnesota Valley Testing Lab. - Tom Berg, New Ulm, Minn.
1630 - 1540 - Break
1640 - 1730 - Avco Lycoming - Joe Hutterer

Wednesday, March 19:

0900 - 0950 - Champion Spark Plug - Stan Fletcher
0950 - 1000 - Break
1000 - 1050 - Aircraft Instruments & Development
1050 - 1100 - Break
1100 - 1250 - Piper Aircraft
1200 - 1330 - Lunch
1330 - 1420 - Ag Chemical Program - Darrol Schroeder, Davenport
1420 - 1430 - Break
1430 - 1520 - Bendix - Electrical Components - Ed Liebest
1520 - 1540 - Coffee Break
1540 - 1630 - Dorn-Margoling, ELT - Batteries and antennas
1630 - 1640 - Break
1640 - 1730 - Inspection Authorizations Renewal

Thursday, March 20:

0900 - 0950 - AC Spark Plug - Art Pierce
1950 - 1000 - Break
1000 - 1050 - Permatex Corp., Lube Oil Analysis, Sealants - Bonding
1050 - 1100 - Break
1100 - 1200 - Cessna Aircraft Systems
1200 - 1330 - Lunch
1330 - 1420 - Aviation Mechanic's Foundation - Aviation Tech Manuals - Earl Wilson
1420 - 1430 - Break
1430 - 1520 - Chrome Plate, Inc.
1520 - 1540 - Coffee Break
1540 - 1630 - National Aviation Underwriters
1630 - 1640 - Break
1640 - 1730 - Airborne Mechanisms, Vacuum Pumps, De-icing

* * * * *

NORTH DAKOTA CIVIL AIR PATROL WING CONFERENCE SET FOR APRIL 4TH - 5TH AT BISMARCK

The new Kirkwood Motor Hotel has been chosen as the site for the annual CAP North Dakota Wing Conference April 4th and 5th. Col. Joe Renville of Fargo has been appointed as Wing Project Officer for the event, while Jeff Wachter of the Bismarck Squadron will be Project Officer at the local scene, according to Dr. Warren W. Woodham, Commander of the hosting Bismarck Squadron. Woodham said that Wachter had also recently been named as manager of the newly constructed Kirkwood Motor Hotel just west of the Kirkwood shopping complex. All reservations will be left up to the individuals attending.

The agenda calls for establishment of Cadet goals; Senior Membership; Communication seminar; Aircraft usage and search and rescue procedures and a CAP Cadet Special Activities Selection Review Board. All members of the State Civil Air Patrol are welcome to attend.

* * * * *

WEATHER IS LARGE FACTOR IN CAUSING FATAL ACCIDENTS AMONG GENERAL AVIATION PILOTS

In a recent safety information News Release, the National Transportation Safety Board (NTSB) stated that while the overall accident rates improved over a period of 8 years from 1964 to 1972 in general aviation, fatal weather involved accidents showed a trend upward. On the basis of special study of weather involved general aviation accidents, the NTSB has issued ten safety recommendations to FAA, seeking better trained pilots and improved aviation weather service.

The study report draws from accident statistics a picture of the general aviation pilot most likely to be involved in a fatal accident involving weather. This pilot..

...holds a private pilot's license, has no instrument rating and only a few hours of simulated instrument flight time;

...is making a pleasure flight with at least one passenger;

...receives an adequate preflight weather briefing by telephone based on forecasts which are reasonably accurate;

...crashes in instrument flight weather conditions, probably in fog or rain during daylight hours.

A total of 4,714 persons died in 2,026 fatal weather-involved general aviation accidents in the period of 1964-72. No other cause was as frequently cited as weather. These accidents represented 36.6 per cent of all fatal general aviation crashes, and came with disturbing regularity despite improvements in aircraft, instrumentation, training, training facilities, the air traffic control system, weather facilities, weather services and navigational aids.

Nearly 60 per cent of the fatal weather accidents involved pleasure flying. Pilots had relatively little flight time; peak involvement according to flight time was between 100 and 300 hours. About 65 per cent of the accidents involved pilots who had less than 50 flight hours during the preceding 90 days.

The most frequently cited pilot causes were "operation beyond experience/capability level" and "failure to obtain/maintain flying speed." Almost 62 per cent of the pilots did not file flight plans, suggesting the possibility "that there may be a relationship between accident involvement and lack of a filed flight plan," the Board said.

In the cases studied, 74 per cent of National Weather Service forecasts either were substantially correct or overstated the weather problem expected. In 11 per cent, weather was worse than forecast. More than 28 per cent of the pilots received no preflight weather briefings, and the accident rate for every 100,000 cases in which a pilot studied weather information by himself was nearly 10 times the rate for pilots briefed by trained weather briefers.

The Safety Board had concluded in 1969 that too many weather-involved fatal general aviation accidents were being caused at least partially by "the pilot's mistaken idea of his ability to cope with certain weather situations." Despite broad-scale government and industry efforts, the Board said today it must conclude from its latest study that "the situation has not improved."

The Board urged general aviation pilots to take all possible advantage of weather flying education and experience, visit Weather Service and FAA facilities for familiarization, watch Public Broadcasting Service televised aviation weather programs, and make suggestions for improved weather service.

"Never initiate a flight without a thorough preflight weather briefing, and if there is any doubt, DON'T GO," the Board said.

* * * * *

CITIES OF VELVA AND TOWNER CREATE AIRPORT AUTHORITIES

The Cities of Velva and Towner can be added to the ever-growing list of City Airport Authorities, bringing the total to 68 and to this list can be added the 4 county Airport Authorities.

Velva named Burdette D. Kittelson to a 5 year term; Ruben Nordstrom, 4 years; Gene Gackle, 3 years; Michael Kramer, 2 years and Joseph Keller to a 1-year term. The Authority is busy looking for a suitable site and has had a meeting with the Federal and State aviation officials recently, to explore alternatives and determine the proper course of action.

Towner, after several years of contemplating an Airport Authority, made the move and named Jack Fairbrother to a 5 year term; Richard Gunter, 4 years; Dennis McCombs, 3 years; Harold Chole, 2 years and Clifford Larson to a 1-year term. Towner has one of the better maintained turf runways in the State. The Authority was created primarily for the purpose of a better continuity in the policy and management areas.

WYNDMERE: This southeastern city of 519 population has invited the North Dakota Aeronautics Commission to a meeting March 10th to discuss formation of an Airport Authority. Proponents of the Airport Authority stress that a good turf single landing strip would suffice for a City of Wyndmere's size.

* * * * *

HAVE ANY ADDRESS CHANGES? PLEASE NOTIFY US

Please notify the Aeronautics Commission if you have a change of address. When the Newsletter gets returned to us with the notation "Moved" or "No longer at this address", we remove your name from the mailing list. Please give this your prompt attention.

* * * * *

FOR SALE: 70 gal. Sorenson Spray unit with 2 blades. Contact Harold Peterson, Drayton, N.D. 58225 or call 701-455-3304.

AIRPORT-AIRWAYS TRUST FUND AS REPORTED BY IRS

Internal Revenue Service collected a total of \$836.1 million in excise taxes for the Trust Fund in 1974. The following is a breakdown of the total which is given in thousands of dollars:

	1974	1973	% Change	Total % of
Noncommercial aviation gasoline (7 cents per gallon)	25,377	23,907	6.1	3.0
Noncommercial turbine fuel (7 cents per gallon)	31,956	23,613	35.3	3.8
Ticket tax (8 per cent on domestic fares)	659,178	579,167	13.8	78.8
Waybill tax (5 per cent of tariff)	41,931	37,214	12.7	5.0
International passenger tax (\$3 per person)	56,907	44,549	27.7	6.8
Civil aircraft use tax*	20,787	19,292	7.7	2.4
TOTAL	836,136	727,742		

*(\$25 per year plus an additional 2 cents per pound on piston aircraft over 2,500 pounds and 3½ cents per pound on turbine aircraft.)

* * * * *

FEDERAL PROGRAMED PHASE-OUT OF FLIGHT SERVICE STATIONS

The Federal Aviation Administration faced with a evergrowing cost of manning and maintaining the FSS system, which in 1949 numbered 464 stations, envisions that in the future, it can drop the total down to 30 manned stations from the present 316.

FAA's plans were to cut down to 138 stations, then starting the automation system which includes (AMOS) Automated Meteorological Observation Service and other sophisticated systems.

The 30 super stations would be scattered about the nation and would have to serve the nations 12,000 plus airports, largely via phone and it would seem that pilot face to face weather briefings would for all intent be practically a thing of the past.

Statistics have shown that domestic VFR flight plans are filed only slightly more than 10% of the time and then only for search and rescue purposes. This fact coupled with the fact that FAA has rumbled that they would like to be able to assess user fees in the event of a search, would surely decrease the filings and negate the necessity of flight service stations further.

* * * * *

AIRCRAFT METAL PROPELLER BLADE FAILURE (A condensation of FAA Advisory Circular No. 20-37B, 9-12-74)

WHY BLADES FAIL. An investigation of a representative number of propeller blades disclosed that failures occurred because of fatigue cracks which started at mechanically formed dents, cuts, scars, scratches, nicks, or leading edge pits. Blade material samples in most cases did not reveal evidence of failure caused by material defects or surface discontinuities existing before the blades were placed in service.

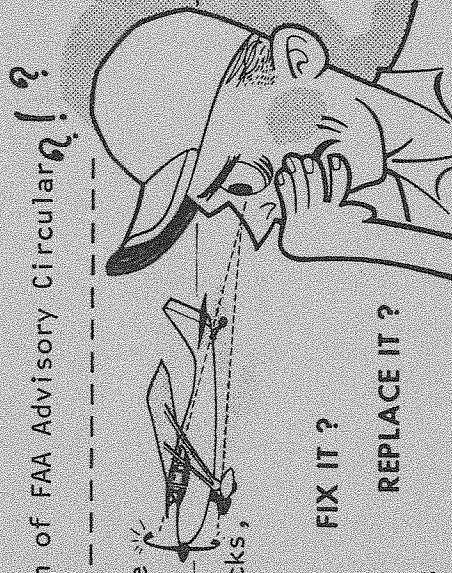
Often fatigue failure occurs at a place where previous damage had been repaired. This may be due to the failure actually having started prior to the repair or the repair may have been improperly performed. Too many blade straightening or blade repitching operations can overstress the metal, causing it to fail. FAA Advisory Circular 43.13-1A, Chapter 12, and the propeller manufacturer's instructions or recommendations contain information concerning the limitations for repair or straightening of damaged blades. Exceeding these limitations may result in blade failure during operation.

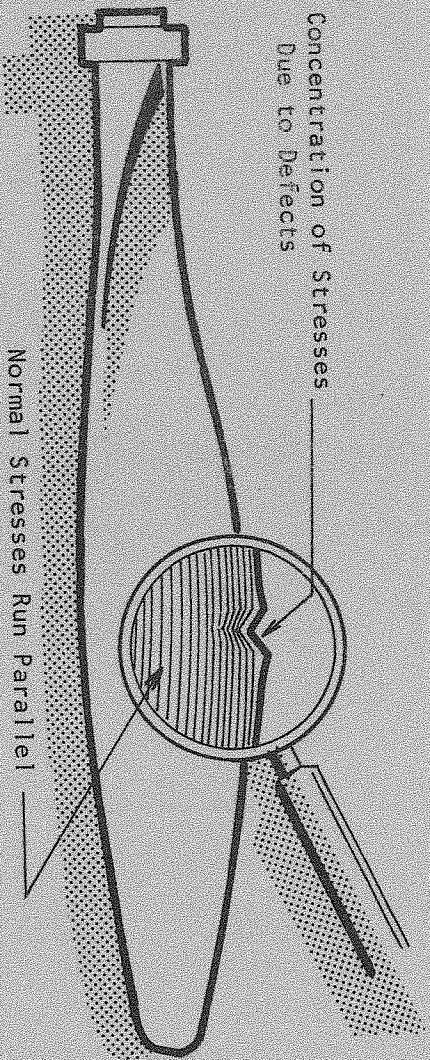
HOW BLADES FAIL. The stresses that normally occur in a propeller blade may be envisioned as being produced by lines of force that run within the blade approximately parallel to the surface.

When a defect occurs, it tends to squeeze together the lines of force in the defect area, thereby increasing the stress. This increase in stress may be sufficient to cause a crack to start. Even a small defect such as a nick or dent may develop into a crack. The crack, in turn, results in a greater stress concentration than existed before. The resulting growth of the crack will almost inevitably result in blade failure. This condition is so common, and the results are so serious, that great emphasis should be placed on the daily and preflight inspection of propeller blades for defects. The stresses on a propeller are many. To begin with, the propeller is at the end of the energy chain; it is responsible for converting as much as possible of the brake horsepower of the engine into thrust.

During normal operation there are at least four separate stresses imposed on it: Thrust, torque, centrifugal force, and aerodynamic force. Additional stresses may be imposed by vibration caused by fluttering or uneven tracking of the blades.

See diagram on the next page.





WHERE BLADES FAIL. Experience indicates fatigue failures normally occur within a few inches of the blade tip; however, failures have also occurred in other portions of the blade when dents, cuts, scratches, or nicks are ignored. Failures have also occurred in blades near the shank and at the propeller hub well out of the critical areas; therefore, no damage should be overlooked or allowed to go without correction.

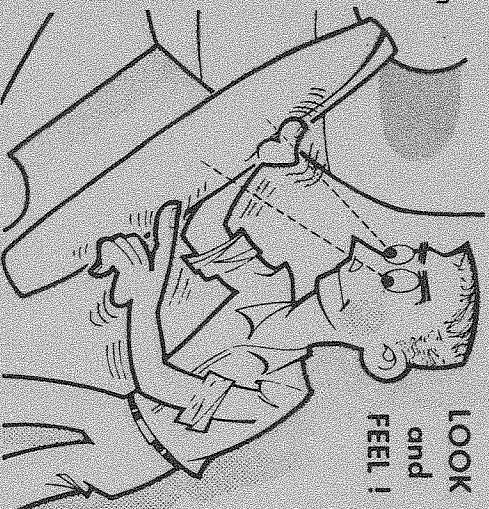
BLADE INSPECTION. When performing an inspection

on the propeller, especially during the pre-flight inspection, inspect blades complete not just the leading edge - for erosion, scratches, nicks, and cracks. Regardless of how small the surface irregularities, consider it as a stress riser subject to fatigue failure.

Propeller manufacturers' manuals, service letters, and bulletins specify methods and limits for blade maintenance, inspection service, and repair. In certain cases, suspected cracks or defects should be repeatedly local etched until their nature is determined. Damaged blades that are on the manufacturer's list of blades that cannot be repaired should be removed from service. When repairs are to be made the manufacturer's instructions should be followed using acceptable industry techniques and practices. All propeller repairs should be performed by qualified and competent personnel.

BLADE TIPS. Your conscientious application of these helpful tips will greatly reduce potential and actual propeller blade failures:

- a. Keep blades clean - the crack cannot be seen if covered with scum or other foreign matter.
- b. Avoid engine runup areas containing loose rocks, gravel, etc.
- c. Do not move the aircraft by pushing or pulling on the propeller blades - they were not designed to be used as handles.



AVIATION INDUSTRY SEES A FUTURE SHORTAGE IN AVIATION MECHANICS

Gordon Pearson, manager and co-owner of Dakota A Tech of Fargo, a vocational airframe and powerplant training school, said that according to word from the industry, a shortage of trained aircraft mechanics is developing. He stated that the employment outlook is good and that industry seems to be hiring graduates.

The next class will begin March 24th and if anyone is interested in the curriculum and schedule of the fees, they can be obtained by writing or calling Dakota Aero Tech, P.O. Box 5534, University Station, Fargo, N.D. 58102, Telephone 701-237-5307.

* * * * *

GENERAL AVIATION SURVEY COMPILED BY FAA WITH HELP OF STATISTICS GATHERED BY CIVIL AIR PATROL

The FAA has released a survey that detailed general aviation operations at 213 airports in 38 states and questioned more than 400,000 pilots during a period between June and September of 1972. The statistics were gathered by the various Civil Air Patrol units in the 38 states. Pilots were asked a series of questions to determine what type of flight they were making, what sort of aircraft they were using, the navigation equipment the aircraft had and the length of the flight. Although the survey was made more than two years ago, before the onslaught of the fuel crisis, it does provide an analytical profile of general aviation operations.

The report shows that the average general aviation flight covers a distance of 236 miles and carries 2.5 persons and that a flight plan is not filed for more than one-half of all general aviation operations. For those flights in which a flight plan was filed, 59 per cent were for VFR flights with the remaining 41 per cent of the flights surveyed were for IFR operations. According to type of operation, 45 per cent were devoted to corporate or executive travel and five per cent each for flight instruction and non-scheduled air taxi operations.

Copies of the study, General Aviation Activity Survey, 1972, may be obtained from FAA, Information and Statistical Division, Office of Management Systems, AMS-240, 800 Independence Avenue, SW, Washington, D.C. 20591.

NEW AIRFOIL BEING TESTED AT LANGLEY

The Advanced Technology Light Twin (ATLIT)* (Piper Seneca) now under test flight at Langley has a wing airfoil which is a development from the supercritical airfoil studies; a development aimed specifically for general aviation aircraft. Previously work had been done in aircraft performance in the high subsonic regime.

Figure A (below) is the airfoil flying now at Langley. It is a 17% thickness airfoil, meaning that if the chord is 100 inches, the thickness will be 17 inches. They tried the airfoil with the reflex curvature of the lower surface near the trailing edge modified to a straight surface. Wind tunnel results illustrate clearly that substantial performance penalties will result from a straight line contour modification of this airfoil." "One of the design concepts of the ATLIT program is to utilize spoilers for lateral control, thereby allowing the use of full-span flaps." They found simple spoilers to be very effective; however, in one particular situation with negative angle of attack, the spoiler was not effective for lateral control.

Figure B pictures the same airfoil with a fowler flap installation. With full span fowler flaps windtunnel studies indicates that general aviation will profit greatly from the development of the GA(W)-1 family of airfoils. Incidentally, "G" stands for general, "A" for aviation, and "W" for Richard T. Whitcomb of the Langley Research Center, who was chiefly responsible for the development of the airfoil. Whitcomb received the Wright Brothers Memorial Trophy in 1974 for his work.

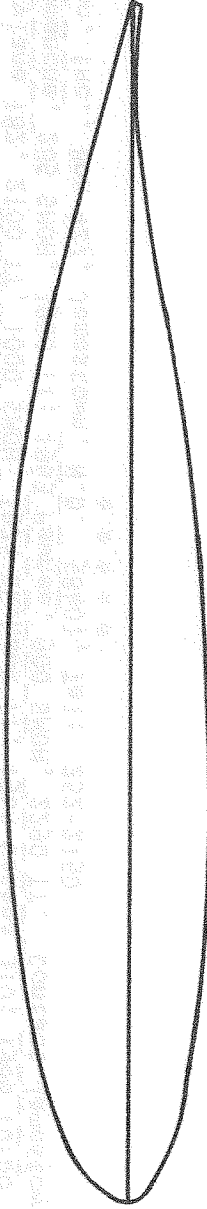


Figure A

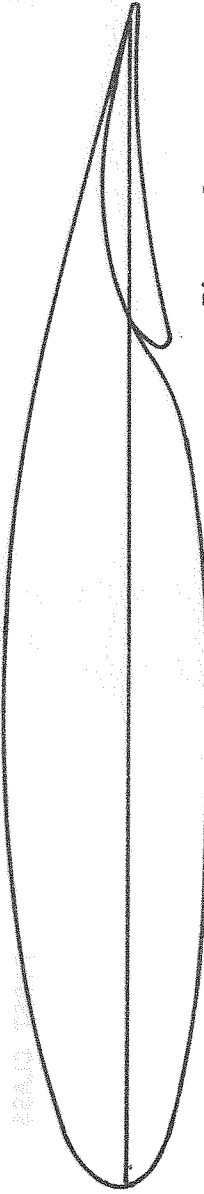


Figure B

In the Langley tests, a Piper Seneca has had the outboard wing panels changed to the GAW-1 wing.

A second step in this research will concern propeller efficiency. Two experimental propellers using the GAW-1 airfoil have been designed by the Robertson Aircraft Corporation of Renton, Washington and have been shipped to Langley. The propellers were manufactured by Pacific Propeller Inc. The man who is managing and coordinating the program as to design and fabrication efforts between Robertson Aircraft, Piper Aircraft and the University of Kansas is Dr. David Kohlman of the University of Kansas.

The most notable difference in the ATLIT prop blades is a dishd back side, with a cusp on the airfoil section, which begins about one-third of the way out from the hub and extends to the tips. The most significant performance improvement is expected from the new props in the single engine rate of climb. A parallel series of tests will determine the difference between the standard propellers and the new propellers.

* - Foregoing article a composite of articles from Southeastern Oklahoma State University "Aviation Technical News" and Air Facts Magazine.

GENERAL AVIATION REGISTRATIONS UP FROM PREVIOUS YEAR

North Dakota registered 1,345 aircraft in the calendar year of 1974 for an all-time high, according to Harold G. Vavra, Director or translated into percentage, a seven per cent increase compared to 1973.

Of the total, 283 aircraft are special purpose, such as aerial crop application and 20 were used for weather modification. Vavra attributed the increase to improved economic conditions during the latter part of 1974, plus an increase in the number of airports with paved runways and the use of aircraft to off-set highway speed restrictions.

AERONAUTICS COMMISSION OFFICE TO MOVE TO NEW QUARTERS

In the event you walk into the offices where you thought the Aeronautics Commission once were, but are not, don't panic, we are still on the Bismarck Municipal Airport.

The move is expected to be accomplished during March and will be into newly constructed quarters immediate south of the large hangar. The City of Bismarck has constructed a new combination General Aviation Terminal complex, that also houses the airport managers office; line office; Security office and the North Dakota Aeronautics Commission. Telephone and mailing address will remain the same.

* * * * *

FOR SALE: 2-1974 Cessna AgTrucks, 360 TT; Piper PA-18 with 90 Gal Sorenson; 1975 Cessna AgTruck, night lights, 20 TT. Contact Dakota Aviation, Inc., Grafton or Walhalla, N.D. Tel: Grafton 352-0271 - Walhalla - 549-3220 * * * *

FOR SALE: 1969 200 Arrow, approx. 1000 hrs. left on engine (balance and blueprinted), Cert. IFR, marker beacons, Mark 12, Genave radios, auto pilot, Piper elec. trim, Jan. annual, always hangared, EGT. Contact Dr. O. H. Welna, Fargo, N.D. 237-9532 or 232-7404. * * * *

FOR SALE: 1968 Cessna 150 Commuter, 3900+ airframe, 150 SMOH, 1 yr. paint and interior, full panel, wheel pants, spinner, Nav Com. 300 90 ch., ELT, annual July. Contact Joe Dugan, Mercer, N.D. 58559, Tel: 447-5922 * * * *

FOR SALE: 1965 Twin Cessna Super Skymaster 337, 1386 hrs. TT, high compression, full IFR, King Dual Navcoms, glide slope, Transponder, Bendix ADF, 3LMB, 300 AP, auxfuel, oxygen, 5 seats, many extras, July 1975 license. Contact W. L. Mraz, Box 215, Cavalier, N.D. 58220, Tel: 701-265-4941 after 5:30 p.m. * * * *

FOR SALE: 1969 Pawnee 260, 1550 TT with spreader; 2-1975 PA-18's Super cubs, ferry time only; 1975 Citabria; 1975 Cessna 190 Commuter; 1975 Skyhawk TT loaded; 1970 Cessna 160 Aerobat 1800 TT OSMOH; 1973 Citabria, Radio, 250 TT; 1974 PA-151 Warrior 400 TT; 1975 PA-151 Warrior, ferry time; 1966 Skyhawk 2100 TT, OSMOH; 1967 Skylane, 300 SMOH, full IFR; 1969 Cessna 182 Skylane 1450 TT; 1970 Cessna Skylane 1300 TT; 1970 Skylane 182, 2100 TT, 1000 SMOH; 1974 Skyhawk 11; 1964 Cessna 310; 1966 Turbo Twin Comanche, 285 SMOH, 1900 TT; 1963 Pawnee, 900 SMOH, 2290 TT. Contact Jamestown Aviation, Inc., Box 427, Jamestown, N.D. 58401, Tel: 252-2150 * * * *

NORTH DAKOTA AERONAUTICS COMMISSION

BOX U
BISMARCK, NORTH DAKOTA 58505

FIRST CLASS

FOR SALE: 1975 Cessna Commuter, 300 Nav/Com, 360 ch., 160 ch. Nav, full panel, 95 TT, tinted windows, winterization kit, gold & white; 1975 Skyhawk 11, transponder, 300 Nav/Com, 720 channel, 60 TT, headrest, tinted windows, winterization kit; 1975 Cessna Skyhawk 11, Nav-Pac, 400 TT, gold & white, 1LS, headrests, tinted windows, winterization kit, articulating seats. Contact OK Aviation, Bismarck, Municipal Airport, Bismarck, N.D. Tel: 701-258-5610. * * * *

FOR SALE: 63 Baron, 550/650 on factory remans, Collins Pn 101, Full IFR, B 4 auto pilot, brand new paint & interior, double sharp; 1974 Super Viking 300, only 40 TT, Narco equipped, Century 11 coupled, three blade, float kit, Nav/Com & ADF; 1973 Cherokee 235, 575 TT, Ferry time only, long range fuel, float kit, Nav/Com & ADF; 1975 "C" package Citabria, rear seat King equipped with Auto control 11, like new; 1975 "C" package Citabria, rear seat heater, Escort 110, blue & white; 1974 U206 Stationair, 100 TT, Full IFR pkg, 400A Nav O Matic three axis auto pilot, Three blade prop, strobes, leather interior; 1975 Cessna 180, ferry time only, Nav/Com & ADF, float kit, long range fuel, Red & white; 1959 Travel Air, 900 SMOH on 2000 TBO engines, full IFR, three axis auto pilot, one year custom paint & interior, double sharp; 1965 Beech Debonair, 1650 TT, 600 SMOH, 350 on prop, Full King pkg less transponder, B-1 auto pilot; 1975 Turbo Seneca 11, ferry time only, King Silver Crown package, Altamatic 111-C three axis auto pilot, complete de-ice, strobes, loaded; 1974 Aero Commander 112, 250 TT, Complete King Silver Crown package with KN 65 Digital DME, Century I with tracker; 1964 Twin Comanche "D" SMOH, one year custom paint, full IFR, three axis auto pilot; 1975 Cessna Skyhawk 11, NC 300, Long range fuel, many extras, red & black on white; and many many more. Contact Commander Aviation Corp. Bismarck, Call 701-223-6862 or nights 701-223-3388.