POST ON BULLETIN BOARD

North Dakota
Aeronautics Commission
State Capitol
Bismarck, North Dakota
May 10, 1954

NORTH DAKOTA NEWS LETTER

FOURTH ANNUAL CONFERENCE ON AERIAL CROP DUSTING AND SPRAYING DRAWS 84

The Fourth Annual Conference on Aerial Crop Dusting and Spraying held at the North Dakota Agricultural College, April 23-24 drew 84 spray pilots and chemical representatives from North Dakota, South Dakota and western Minnesota.

Special representatives were present from the United States Department of Agriculture to discuss the technical adjustment of airplane spray equipment for most effective results. Included in this group were Dr. J.C. Chamberlin, Entomologist in Charge, Agricultural Research Branch of USDA, Forest Grove, Oregon. Dr. Chamberlin participated on both panel discussions and in addition, gave a one-half hour talk covering research programs being conducted at USDA, Forest Grove, Oregon to study characteristics of airplane spray patterns at low flight elevations with relation to insect control. Dr. Chamberlin's talk was illustrated with movies and slides. Arthur Gieser, Chief pilot of the Plant Pest Control Branch of USDA, Oklahoma City, Oklahoma discussed the various factors which control droplet size, drift and rate of descent of chemicals of various droplet size.

Incidently Arthur Gieser is a native of North Dakota, having barnstormed the state in the days when an airplane was a subject of prime curiousity to the citizens of the state. He recalled his activity of aerial hunting of fox and coyote in North Dakota some 15 - 20 years ago.

This year the conference featured two one-hour panel discussions with 8 to 10 operators and experts participating. Comments have been very favorable towards the continuation of this idea in future conferences.

Speakers included Dr. Fred S. Hultz, President, North Dakota Agricultural College; Dr. Glenn C. Holm, Dean of the School of Agriculture, NDAC; Wayne Colberg, NDAC Extension Service Entomologist; W. E. Brentzel, Plant Pathologist, NDAC; Dr. Earl A. Helgeson, Chairman of Botany, NDAC; Russell Widdifield, NDAC Extension Service Agronomist; Dr. Joseph H. Schultz, Chairman Department of Horticulture and Forestry; Dr. John Callenbach, Chairman Entomology Department, NDAC; Dr. Enoch B. Norum, Soils Scientist, NDAC; and Dr. J. C. Chamberlin, USDA, Forest Grove, Oregon.

FLIGHT BREAKFAST AT GRAFTON, NORTH DAKOTA, SUNDAY, MAY 16, 1954

The Grafton Flying Club and the Grafton Squadron of the North Dakota Civil Air Patrol are sponsoring a flight breakfast and open house on Sunday, May 16, 1954 at the Grafton Municipal Airport. The flight breakfast is scheduled from 9:00 a.m. to 1:00 p.m. with the general public and fly-in guests invited.

According to their announcement, the 178th Fighter Interceptor Squadron of the North Dakota Air National Guard will have "Jets" over the airport at 1:30 p.m., flight rides will be available all day, movies will be shown in the afternoon and personal aircraft demonstrated.

Ernest Hutson, Jr., Manager of the Grafton Municipal Airport, says the field will be in excellent condition unless heavy rains are experienced on Friday and Saturday preceeding the flight breakfast. The field has a North-South and East-West runway both 2,400 feet. A "follow me" jeep will be used in parking aircraft. Fly-in guests are requested to bring their own tie-downs.

FOR SALE

In this column we will accept a limited number of FOR SALE AND WANTED TO BUY items. Please mail to our attention.

FOR SALE: Complete shop equipment. New and used parts, large gun oil furnace, metal tools, valve seat grinder, hand tools, 90 HP Piper PA-11, also wrecked 90 HP PA-11, two W-49 Sprayers, Truck with water trailer and pump and hose, 1000 gallon capacity. Good Spray area with plenty of maintenance work available - - - $5,000. Reason for selling -- permanently disabled. Contact Richard A. Turgeon, 1310 South First Street, Carrington, North Dakota.

AERIAL CROP SPRAYER'S LICENSES BEING ISSUED

As this Newsletter goes to press 58 aircraft have been licensed by 30 operators for aerial crop spraying and dusting in North Dakota for 1954. Applications are coming in daily. Every airplane is required to display an aluminum license plate 3" X 6" on the engine cowl. Plates issued to Commercial Operators are painted green while plates issued to Private pilot's for own land only are painted blue.

Applications are way ahead of last year when this office began issuing permits in the first week of May.

AIRCRAFT REGISTRATIONS PASS THE 700 MARK (MAY 15th DEADLINE FOR REGISTRATION)

720 aircraft in North Dakota have been registered for 1954 as this letter goes to press with more coming in daily. May 15th is the deadline for application for 1954 aircraft registrations. After May 15th delinquent penalties are charged for late registrations at the rate of ten cents per day for the first 15 days followed by $2.00 for each 30-day period or fraction thereof not to exceed 150 days.

If you haven't got yours in---now is the time. Application forms may be obtained at any airport in the state or direct from the Aeronautics Commission, Bismarck, North Dakota.

EXECUTIVE PILOT

The editor has received a letter from Mr. Henry Hoffman, San Diego, California, a former resident of Grafton, North Dakota. Mr. Hoffman is seeking employment as a pilot, furnishing his own aircraft. He owns a Navion. Is presently employed in the aircraft industry in California but expects to return to North Dakota soon.

Mr. Hoffman says he holds a commercial license with over 700 hours and is in the process of getting an instrument rating. His California address is: 1783 Sunset Blvd., San Diego 3, Calif.

FLIGHT BREAKFAST AT MILNOR, NORTH DAKOTA - SUNDAY, MAY 23, 1954

The Milnor Squadron of the North Dakota Civil Air Patrol has announced a flight breakfast at Milnor Airport, Sunday, May 23, 1954. According to the announcement---free breakfast will be served to pilots and passengers flying to Milnor on May 23rd. Announcement also states that three door prizes and several other small awards will be given away during breakfast hours.

WILLISTON GETS AIR SERVICE VIA TREASURE STATE AIRLINES

Treasure State Airlines, Great Falls, Montana, according to press releases, has inaugurated passenger flight service into Williston, North Dakota. R. L. Burke is president of the firm. Treasure State Airlines is operating Lockheed 10-A aircraft from Great Falls, Lewistown, Billings, Miles City, Glendive, Sidney and Williston.

The president of the company said that the firm plans to fly the route under a CAA air taxi permit daily except Sunday.

FRONTIER AIRLINE'S APPLICATION STILL UNDECIDED

Frontier Airlines, Inc., Denver, Colorado application to the CAB to provide scheduled airline service within the Williston Basin including a number of cities in both North Dakota and Montana is still undecided. The original application was made in October, 1952.

Paul N. Pfeiffer, CAB Examiner, recommended, after extensive hearings, that Frontier Airlines be extended from Billings, Montana to Bismarck, North Dakota via Miles City, Glendive, Sidney, Wolf Point, Williston and Dickinson, North Dakota until March 31, 1955.

The Examiner recommended that Northwest Airlines, Inc. be suspended at Miles City; that Braniff remain at Minot; that the public convenience and necessity do not require the extension of Frontier Airlines, Inc. to Great Falls, Shelby, Havre, Malta, Glasgow, Montana and Minot, North Dakota.

Following the Examiner's recommendation several parties to the case filed notices of exception to the initial decision with requests for oral arguments before the CAB. Apparently a decision will be delayed on the case for several months.

NATIONAL FLYING FARMERS SET ANNUAL CONVENTION

The National Flying Farmer's Association have set their 9th Annual Flying Farmer Convention for June 1 - 5, 1954 at Fresno, California & Camp Curry, Yosemite National Park, according to Lee J. Talladay, President.

AIR TRACTOR PRICES ARE LISTED

List prices for the Central Aircraft Air Tractor, specially designed agricultural aircraft, have been announced as follows: Model 101-A, $14,975; Model 101-B, $12,475; and Model 101-C, $11,780. All prices are FAF, Yakima, Washington. The A Model is ready to operate; B requires buyer to furnish engine, prop, and mount; and C is same as B, but minus dust chute or spray booms.

AIRPORT CONTROL ZONE'S - WHERE - WAY - WHEREFORE

Recently a number of warnings have been issued to pilots in the state by CAA in reference to violations within a control zone of an airport during below VFR weather conditions.

To begin with, airports with "control zones" in North Dakota include Grand Forks, Fargo, Jamestown, Bismarck, Minot and Dickinson. The Civil Air Regulations provide that a pilot must have at least 1,000 ft. ceiling and 3 miles visibility in a control zone or obtain ATC (air traffic control) prior permission to land. This may be accomplished by calling CAA communications by radio and requesting the proper ATC clearance. The CAA communicator will promptly request clearance with Minneapolis ATC and relay the clearance to the pilot by radio in a matter of a minute or so.

On the otherhand, if Air Traffic Control at Minneapolis has an instrument flight plan on an airline, military or civil aircraft that is due to arrive at about the same time the local pilot requests an ATC clearance, then the local pilot will probably be instructed to remain clear of the airport control zone until such time as the airline under instrument flight conditions has landed. The control zones around the larger airports were established to prevent possible collision between two aircraft, one of which may be flying VFR under the overcast and the other which may be on instruments making an approach to land or breaking out of the overcast.

The larger airports in the state such as Bismarck and Fargo turn on the airport rotating beacon light when the ceiling and visibility go below 1,000 ft. and 3 miles. Therefore, if a pilot approaches one of the above control zones without a radio, and finds the airport rotating beacon operating in daylight, it is a signal of below VFR conditions.

The outline of the control zone is shown on the sectional aeronautical charts as a broken circle 10 miles in diameter around the airport. In some cases the control zone will encompass additional area, depending on the various instrument procedures in use at the airport. In any event, the aeronautical chart shows the control area enclosed by a broken circle along with any additional area involved.

LOW ALTITUDE ACCIDENTS ON INCREASE IN STATE

Since the first of the year several serious and near serious accidents have occurred involving one or more of three flight conditions as possible contributing factors. These are: LOW ALTITUDE, SLOW SPEED, STEEP BANKED TURNS.

Since the aerial crop spraying season is upon us, it might be well to dust off some of the aeronautical fundamentals. This is also timely for every private and commercial pilot who may have become a little rusty during the winter months.

The Air Force has developed some interesting figures which show the relationship between degree of bank, wing load factor and the stall speed. These figures should make a pilot think twice before attempting steep banked turns within several hundred feet of the ground.

Whenever a turn or bank is executed, the wings not only carry the weight of the airplane, but are immediately required to carry a load imposed by centrifugal force. The steeper the bank, the greater will be the centrifugal force, and the greater will be the lift required to overcome the additional wing load.

Here are the facts in table form:-----

(Continued next page)

Degree of Bank	Wing Load Factor	Stall Speed Multiplication Factor
0	1.0000	1.0000
10	1.01	1.0041
20	1.06	1.0295
30	1.15	1.0723
40	1.305	1.1423
50	1.555	1.249
60	2.000	1.4142
70	2.92	1.7088
80	5.76	2.4
90	Infinity	Infinity

For example if an airplane grosses 2,000 pounds and has a rated stall speed of 50 miles per hour the above tables will show the following:

(1) At a 30 degree steady bank the wing load is 2,000 lbs X 1.15 = 2,300 pounds
The stall speed is 1,0723 X 50 = 53.6 MPH.

(2) At a 40 degree steady bank the wing load will become 2,610 pounds.
The stall speed equals 57 MPH.

(3) At a 50 degree steady bank the wing load will become 3,110 pounds.
The stall speed equals 62.45 MPH.

(4) At a 60 degree steady bank the wing load will become 4,000 pounds.
The stall speed equals 70.7 MPH.

(5) At a 70 degree steady bank the wing load will become 5,840 pounds.
The stall speed equals 85.44 MPH.

(6) At a 80 degree steady bank the wing load will become 11,520 pounds.
The stall speed equals 120 MPH.

Using the above table, the approximate wing loading and stall speed may be calculated for your airplane for any degree of steady bank. It is IMPORTANT to know that the above table holds true only for a steady bank. If an abrupt pull-up is combined with a steep bank then the wing load will be much greater and the stall speed will increase very much beyond the figures shown in the table.

HIGH SPEED STALLS- - an abrupt pull-up at high speed not only zooms the stall speed of an airplane, but if carried to the extreme may cause structural failure. Assume an airplane, which has a normal stalling speed of forty MPH, is flying at 120 MPH. The pilot pulls the stick back abruptly; What is the load imposed on the wing? What happens to the stall speed?

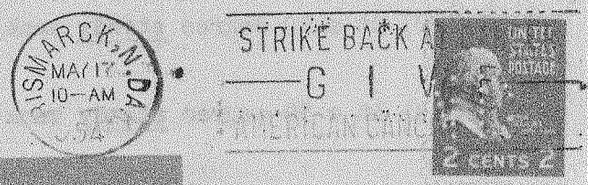
The velocity of 120 divided by the normal stalling speed of forty will give a figure of 3 and three squared is nine, which is the wing load factor developed in this type of abrupt pull-up. If the airplane weighs 2,000 pounds, a load factor of nine would require the wing to carry 18,000 pounds momentarily which is 9 g's and may cause structural failure.

If the wing and structure held, what would happen to the stall speed under these conditions? The stall speed multiplication factor is equal to the square root of 9 (load factor) which is three. Therefore, the normal 40 mile per hour stall speed would be boosted to 120 MPH, which is what is known as a HIGH SPEED STALL.

It now becomes obvious if a steep banked turn is combined with an abrupt pull-up, it is impossible to keep the airplane flying fast enough to stay out of a stall.

The moral pointed up by these mathematics is this: STAY CLEAR OF STEEP BANKED TURNS OR ABRUPT PULL-UPS NEAR THE GROUND. YOU MAY NOT GET A SECOND CHANCE.

Editor's Note: Since the combination of steep banked turns, slow flight and abrupt pull-ups near the ground has apparently contributed to more accidents in the state in the past seven years than any other major factor, the subject will be continued in future editions of the NEWSLETTER.



WILLISTON CHAMBER OF COMMERCE

WILLISTON, N.D.