

GYROPLANE PILOT

Written Examination Guide

PRIVATE and COMMERCIAL



1966

FEDERAL AVIATION AGENCY

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SUBJECT : GYROPLANE PILOT EXAMINATION GUIDE - PRIVATE AND COMMERCIAL

1. PURPOSE. This advisory circular is being issued to:
 - a. Outline the scope of the basic knowledge (need-to-know) requirements for a gyroplane pilot
 - b. Acquaint the applicant with source material that may be used to acquire this basic knowledge, and
 - c. Present a sample examination to show the applicant the type of test items which he can expect in the written examination.

2. HOW TO GET THIS PUBLICATION.
 - a. Order copies of this publication from:

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 - b. Identify the publication in your order as:

FAA Advisory Circular AC 61-31
Gyroplane Pilot Examination Guide - Private and Commercial

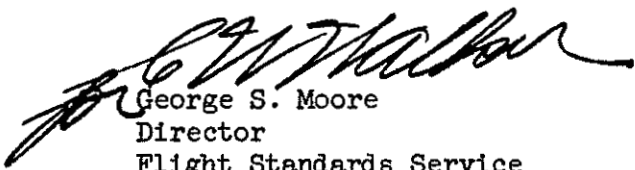

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CHAPTER 1. NATURE OF THE WRITTEN EXAMINATION

1. INTRODUCTION. This study guide was prepared by the Federal Aviation Agency to assist applicants who are preparing for the Private or the Commercial Pilot (Gyroplane) Written Examination.

This guide is not offered as a quick and easy way to obtain the knowledge necessary for passing the written examination; there is NO quick and easy way to obtain the background of experience, knowledge, and skill that the present-day pilot must acquire. Rather, the intent of this guide is to define the scope and narrow the field of study, insofar as possible, to the knowledge requisite to the Private or the Commercial Pilot (Gyroplane) Certificate.

2. TYPE OF TEST ITEMS. The Private Pilot Examination contains 50 test items and the Commercial 60 test items of the "objective, multiple-choice" type, and each can be answered by the selection of a single response from among the four presented. This type of examination has several advantages, two of which are: (1) rapidity in scoring, making it possible for the applicant to receive his grade as soon as possible, and (2) elimination of subjective scoring, the element of individual judgment in determining the grade.
3. TAKING THE EXAMINATION. The equipment needed for taking the examination includes a protractor or plotter, and a computer, preferably one with a wind vector face. It is also desirable to have a pair of dividers for accurate measurement of distances.

Always bear in mind the following facts when you are taking the examination:

- a. There are no "trick items." Each statement means exactly what it says. Do not look for hidden meanings nor read into the test item something that is not intended. Unless specifically stated otherwise, test items do not concern exceptions to the rule; they are based on the general rule.
- b. Always read the complete test items, including the optional responses, before you make your choice. Be sure that you understand what they mean. Then, from the list of alternative responses, decide which one you think is correct. Be sure that the one you select is the best among those listed.

- c. Only ONE of the responses given is completely correct. The others may be the result of incorrect computations, misconceptions of rules and principles, or erroneous or incomplete analysis of the problem. Be sure that you understand and consider all factors.
 - d. Each test item is independent of other test items; that is, the correct response to one item is not based on the correct response to a previous item, although occasionally the same factors may be used.
 - e. If you find that you have considerable difficulty with a particular test item, do not spend too much time on it. Go on to the next item. When you reach the end of the examination, go back to any items which you have passed over previously. This will enable you to use the available time to maximum advantage in demonstrating your knowledge and understanding of the subject.
 - f. In working problems which require computations or the use of the computer, select the response which is closest to the result you get. Due to slight differences in individual computers and small errors that you may make in measuring distances, true courses, etc., it is possible that you will not get a result that agrees exactly with the correct response. However, sufficient spread is provided between correct and incorrect responses so that you will be able to make a positive selection provided you have used correct technique and reasonable care in your computations. (NOTE: When the test is constructed, the correct responses are "double-checked" by several types of computers commonly used throughout the country.)
 - g. When reporting for the examination, you should be prepared to present to the Inspector administering the examination, documentary evidence of your identity and, in the case of a previous failure, your eligibility for reexamination. Normally, the Inspector will not permit you to begin the examination unless there is sufficient time to complete it. The Private Pilot Gyroplane Written Examination requires approximately 3 hours and 30 minutes for completion, and the Commercial Pilot - 4 hours.
4. ELIGIBILITY FOR TAKING THE EXAMINATION. Although certain requirements for the issuance of the Private and the Commercial Pilot Certificate are prescribed in FAR Part 61, there are, at the time of this writing, no prerequisites for taking the written examination initially. Requirements for retaking the examination after failing it are prescribed in Section 61.27, FAR Part 61.

CHAPTER 2. STUDY OUTLINE FOR THE PRIVATE OR COMMERCIAL
PILOT GYROPLANE WRITTEN EXAMINATION

5. INTRODUCTION. This study outline is the framework of basic aeronautical knowledge that the prospective private or commercial pilot must know and be able to apply to pertinent situations. Every test item in the FAA examination can be directly related to one or more of the topics contained in this outline. Frequently, topics may overlap when the situation demands the application of several knowledge areas to arrive at the complete solution of a problem. This subject matter is predicated on operationally realistic airman activity and encompasses the requirements specified in Federal Aviation Regulations. Many topics in this outline are referenced to a few of the sources of information.

6. FEDERAL AVIATION REGULATIONS.
 - a. Have knowledge of:
 - (1) Pilot privileges and limitations (FAR Part 61).
 - (2) Recency of experience requirements (FAR Part 61).
 - (3) Pilot certificates.(FAR Part 61).
 - (4) Pilot medical certificates (FAR Part 61).
 - (5) Pilot responsibilities and preflight actions (FAR Part 91; Exam-O-Gram 4).
 - (6) Aircraft maintenance and inspection requirements (FAR Part 91; Exam-O-Gram 26).
 - (7) Aircraft certificates and documents (FAR Part 91; Exam-O-Gram 26).
 - (8) General operating rules (FAR Part 91; Exam-O-Grams 4, 6).
 - (9) General flight rules (FAR Part 91; Exam-O-Grams 2, 4).
 - (10) Visual flight rules (FAR Part 91; Exam-O-Grams 1, 7).
 - (11) Operating rules at airports (FAR Part 91; AIM).
 - (12) Airport traffic signals and markings (FAR Part 91; AIM).
 - (13) Accident reporting rules (CAB Part 320; AIM).

7. FLIGHT INFORMATION PUBLICATIONS AND AERONAUTICAL CHARTS.

a. Have knowledge of:

- (1) Airman's Information Manual (AIM).
- (2) Aeronautical chart symbols (Sectional Aeronautical Chart; Exam-O-Grams 23, 24, 25).
- (3) Military climb corridors, restricted and prohibited areas (Exam-O-Gram 25).
- (4) Use of airport advisory service (AIM; Exam-O-Grams 14, 22, 24).
- (5) Radio facility data and symbols (AIM; Exam-O-Grams 14, 22, 24).
- (6) Controlled airspace boundaries (AIM; Sectional Aeronautical Chart; FAR Parts 1, 71).
- (7) Significance of runway designations (AIM).

b. Be able to:

- (1) Obtain radio facility information (AIM; Exam-O-Grams 14, 22, 24).
- (2) Obtain airport facility information (AIM; Sectional Aeronautical Chart).
- (3) Select appropriate aeronautical charts (Sectional Aeronautical Chart; Exam-O-Grams 4, 25).
- (4) Determine terrain and obstruction clearance (Sectional Aeronautical Chart; Exam-O-Gram 23).
- (5) Relate FAR flight rules to airport symbols or data.
- (6) Relate FAR flight rules to chart elevations.
- (7) Relate FAR flight rules to controlled airspace symbols.
- (8) Relate FAR flight rules to restricted or prohibited areas.

8. WEATHER FUNDAMENTALS, FORECASTS AND REPORTS (Reference: Aviation Weather AC 00-6)

a. Have knowledge of:

- (1) Measurement of atmospheric pressure.
- (2) Cause of atmospheric circulation. *
- (3) Effect of mountains and other obstructions on wind.
- (4) Relative humidity and its effect on flight.
- (5) Process by which air reaches the saturation point.
- (6) Effect of temperature on air density.
- (7) Effect of temperature on aircraft performance.
- (8) Cloud types and associated weather.
- (9) Fog, frost, clouds, and precipitation.
- (10) Thunderstorms and turbulence.
- (11) Freezing levels and icing conditions (Exam-O-Gram 21).
- (12) Characteristics of a cold front.
- (13) Characteristics of a warm front.
- (14) Characteristics of an occluded front.
- (15) Symbols used in teletype reports and forecasts.
- (16) Weather broadcasts (Exam-O-Grams 5, 17, 26)
- (17) Significance of temperature/dewpoint reports (Exam-O-Gram 21).
- (18) Significance of cloud and ceiling reports (Exam-O-Grams 17, 20, 21).
- (19) Significance of surface wind reports (Exam-O-Grams 17, 21, 26).
- (20) Significance of atmospheric pressure reports (Exam-O-Gram 21).

* Commercial pilots only

b. Be able to:

- (1) Recognize basic weather conditions and trends on surface weather maps.
- (2) Interpret and relate Area Forecasts to the route of flight.
- (3) Interpret and relate Terminal Forecasts to the route of flight.
- (4) Interpret and relate In-flight Advisories to the route of flight.
- (5) Interpret and relate Aviation Weather Reports to the route of flight.
- (6) Interpret and relate Pilot Reports (PIREPS) to the route of flight.
- (7) Interpret and relate Winds Aloft Forecasts to the route of flight.
- (8) Relate surface wind reports to available runways.
- (9) Relate weather conditions or information to FAR flight rules.
- (10) Obtain weather information during preflight planning and while enroute.
- (11) Relate GMT (Z time) to local time in analysis of weather information.

9. PILOTAGE, DEAD RECKONING, AND RADIO NAVIGATION.

a. Have knowledge of:

- (1) Principles of pilotage.
- (2) Chart projections used for air navigation. *
- (3) Time zones and 24-hour clock system.
- (4) Effects of wind on navigation.

*Commercial pilots only

- (5) Significance of magnetic variation and compass deviation (Exam-O-Gram 12).
- (6) Significance of and relationship between track, course, heading, bearing, and radial.
- (7) Significance of and relationship between true airspeed, indicated airspeed and groundspeed.
- (8) Use of navigation computers--slide rule side and wind vector side.

b. Be able to:

- (1) Measure distances and courses on the chart.
- (2) Interpret chart symbols.
- (3) Select appropriate landmarks and checkpoints on the chart.
- (4) Select cruising altitudes based on the direction of flight (Exam-O-Grams 2, 17, 22).
- (5) Select cruising altitudes based on weather conditions (Exam-O-Gram 2).
- (6) Determine winds by interpolation of Winds Aloft Forecasts.
- (7) Determine headings (using Winds Aloft) by wind triangle or computer.
- (8) Determine compass heading (using compass correction card).
- (9) Determine groundspeed and ETAs (using Winds Aloft) by wind triangle or computer.
- (10) Determine groundspeed and/or ETAs by in-flight check.
- (11) Determine time, distance, or speed (using Winds Aloft) by wind triangle or computer.
- (12) Determine fuel consumption or rate of consumption from performance chart and/or computer.

- (13) Determine true airspeed from altitude, temperature, and IAS using computer. *
- (14) Determine rate of climb or descent using computer. *
- (15) Determine true altitude, pressure altitude, and density altitude.

10. RADIO COMMUNICATIONS.

a. Have knowledge of:

- (1) Radio procedures and phraseology (AIM; Exam-O-Gram 14).
- (2) Standard transmitting and receiving frequencies (AIM; Exam-O-Grams 14, 24).
- (3) Significance of wind information in radio transmissions (Exam-O-Gram 26).
- (4) Availability of in-flight assistance (Exam-O-Grams 19, 26).
- (5) Air defense emergencies--SCATER (AIM).
- (6) Direction finding procedures (AIM; Exam-O-Gram 19).

b. Be able to:

- (1) Determine when communications are required (Exam-O-Grams 1, 24).
- (2) Interpret airport traffic instructions and plan approaches and departures.
- (3) Interpret enroute traffic instructions (AIM).
- (4) Obtain emergency assistance (Exam-O-Gram 19).

* Commercial pilots only.

11. FLIGHT INSTRUMENTS AND RELATED FACTORS.

a. Have knowledge of:

- (1) Characteristics of the magnetic compass (Exam-O-Gram 12).
- (2) Airspeed limitations (Exam-O-Gram 8).
- (3) Significance of altimeter settings (Exam-O-Gram 9).
- (4) Significance of pressure and density altitude (Exam-O-Gram 11).
- (5) Effect of temperature on altimeters (Exam-O-Gram 9).

b. Be able to:

- (1) Apply altimeter settings and compensate for errors.
- (2) Interpret altitude indications (Exam-O-Gram 9).
- (3) Determine pressure altitude from appropriate charts, pressure reports, or altimeter adjustment.
- (4) Determine density altitude from appropriate charts or associated factors.

12. GYROPLANE AND ENGINE OPERATION.

a. Have knowledge of:

- (1) Theory of airfoils and rotary wings.
- (2) Forces acting on the gyroplane.
- (3) Functions of the flight controls and the relationship to aircraft axes.
- (4) Effect of wind on gyroplane speeds (Exam-O-Gram 27).
- (5) Effect of crosswinds on ground control.
- (6) Effect of frost or ice on airfoils.
- (7) Principles of reciprocating engines.

- (8) Principles of carburetion.
- (9) Principles of propellers.
- (10) Basic gyroplane fuel systems.
- (11) Basic gyroplane lubricating systems.
- (12) Engine instruments and controls.
- (13) Procedures for adjusting RPM and manifold pressure.
- (14) Effect of altitude on engine performance.
- (15) Effect of improper use of the mixture control.
- (16) Cause and effect of detonation.
- (17) Effect of the use of improper fuel grade.
- (18) Conditions conducive to and the effect of carburetor icing.
- (19) Methods of detecting and eliminating carburetor ice.
- (20) Methods of preventing and eliminating fuel contamination (Exam-O-Gram 8).
- (21) In-flight emergency procedures.
- (22) Significance of best climb speeds.
- (23) Maneuvering speed and its use (Exam-O-Gram 8).
- (24) Methods of coping with wingtip or other aircraft vortices (Exam-O-Gram 3).
- (25) Preflight and post-flight safety practices.

13. GYROPLANE PERFORMANCE CHARACTERISTICS.

a. Have knowledge of:

- (1) Gyroplane flight manuals.
- (2) Effect of temperature and humidity on gyroplane and engine performance.

b. Be able to:

- (1) Compute gross weight and allowable load (Exam-O-Gram 13).
- (2) Compute CG location through the use of loading graphs.
- (3) Use takeoff performance charts.
- (4) Use climb performance charts.
- (5) Use cruise performance charts.
- (6) Use fuel consumption charts.
- (7) Use landing distance charts.
- (8) Use height vs. velocity charts.

APPENDIX 1. RECOMMENDED STUDY MATERIALS

NOTE: References listed were available at the time this publication went to press.

1. AIRMAN'S INFORMATION MANUAL (AIM) (\$15.00). An FAA publication developed as a pilot's operational manual presenting information necessary for the planning and conduct of a flight in the National Airspace System.
2. AVIATION WEATHER MANUAL, AC 00-6 (\$2.25). A detailed study of weather phenomena from the viewpoint of the pilot.
3. PRIVATE PILOT'S HANDBOOK OF AERONAUTICAL KNOWLEDGE (\$2.75)
This text of basic aeronautical knowledge was designed to meet the needs of the airplane private pilot. However, many of the chapters will be helpful to applicants both private and commercial, in the gyroplane rating area.
4. TERRAIN FLYING (Being Revised). Presents a composite picture of the observations, opinions, warnings, and advice from veteran pilots about flying over the various types of terrain in the United States, Alaska, and Mexico.
5. FEDERAL AVIATION REGULATIONS
 - a. Part 1 (\$0.25).
 - b. Part 61 (\$0.50).
 - c. Part 71 (\$0.20).
 - d. Part 91 (\$0.45).

The applicant is responsible for knowing applicable portions of Parts 61 and 91, which, in turn, will require a knowledge of some portions of Parts 1 and 71.

6. CIVIL AERONAUTICS BOARD, SAFETY INVESTIGATION REGULATIONS, PART 320 (\$0.05). Prescribes the procedures and requirements pertaining to aircraft accidents and certain other incidents involving aircraft.

7. VFR EXAM-O-GRAMS. Analyses and explanations of selected topics of aeronautical knowledge presented in the form of questions and answers. Although slanted toward activities involving airplanes, most of the material is applicable to gyroplane operations. These are issued on an irregular basis and are distributed free of charge upon request. The following Exam-O-Grams have been published as of the date of this examination guide:

<u>NO.</u>	<u>TITLE</u>
1	CONTROL ZONE VFR WEATHER MINIMUMS
2	VFR CRUISING ALTITUDES
3	THE DANGERS OF WINGTIP VORTICES (AN INVISIBLE HAZARD TO LIGHT AIRCRAFT)
4	PREFLIGHT PLANNING FOR A VFR CROSS-COUNTRY FLIGHT (Series 1)
5	PREFLIGHT PLANNING FOR A VFR CROSS-COUNTRY FLIGHT (Series 2)
6	PREFLIGHT PLANNING FOR A VFR CROSS-COUNTRY FLIGHT (Series 3)
7	GETTING CAUGHT ON TOP OF AN OVERCAST
8	AIRSPEED INDICATOR MARKINGS
9	ALTIMETRY
10	FUEL CONTAMINATION
11	DENSITY ALTITUDE AND ITS EFFECT ON AIRCRAFT PERFORMANCE
12	THE MAGNETIC COMPASS
13	WEIGHT AND BALANCE
14	RADIO COMMUNICATIONS FREQUENCIES
15	HOW TO USE VOR (Series 1)

- 16 HOW TO USE VOR (Series 2)
- 17 COMMON MISCONCEPTIONS (Series 1)
- 18 LOST PROCEDURES - PILOTAGE
- 19 EMERGENCY OR LOST PROCEDURES (RADIO)
- 20 CEILING AND VISIBILITY
- 21 FLYING INTO UNFAVORABLE WEATHER
- 22 POTENTIAL MID-AIR COLLISIONS (Series 1)
- 23 INTERPRETING SECTIONAL CHARTS (Series 1)
- 24 INTERPRETING SECTIONAL CHARTS (Series 2)
- 25 INTERPRETING SECTIONAL CHARTS (Series 3)
- 26 COMMON MISCONCEPTIONS (Series 2)
- 27 THE EFFECT OF WIND ON AN AIRPLANE
- 28 FACTORS AFFECTING STALLING SPEED
- 29 POTENTIAL MID-AIR COLLISIONS (Series 2)
- 30 FLIGHT PLANS (Series 1)
- 31 FLIGHT PLANS (Series 2)
- 32 SIGNPOSTS IN THE SKY
- 33 USE OF PERFORMANCE CHARTS
- 34 HOW TO OBTAIN PROPER WEATHER BRIEFING
- 35 UNICOM FREQUENCIES AND USES
- 36 COMMONLY MISUNDERSTOOD AREAS OF AERONAUTICAL KNOWLEDGE (Series 1)
- 37 COMMONLY MISUNDERSTOOD AREAS OF AERONAUTICAL KNOWLEDGE (Series 2)

8. HOW TO OBTAIN STUDY MATERIALS. VFR Exam-O-Grams (IFR Exam-O-Grams if desired) are non-directive in nature, and are issued solely as an information service to individuals interested in Airman Written Examinations. They are available free of charge (in limited quantities) by ordering from:

Flight Standards Technical Division
Operations Branch, AC-740
P. O. Box 1082
Oklahoma City, Oklahoma 73101

(Please indicate in your request if you wish to be placed on the mailing list for future issues.)

All other study materials listed may be obtained by remitting check or money order to:

U. S. Government Printing Office
Superintendent of Documents
Washington, D. C. 20442

Private Pilot's Handbook of Aeronautical Knowledge is also available at many fixed-base operations.

There are other excellent commercially-prepared textbooks, audio-visual training aids, and programmed instruction courses which may be helpful in preparation for the examination.

APPENDIX 2. SAMPLE EXAMINATION

The following test items are included for one purpose--to familiarize you with the type of items you may expect to find on the FAA examination. You should keep in mind that the examination is, at best, a sampling of your aeronautical knowledge. It is for this reason that you should concentrate on the section entitled STUDY OUTLINE FOR THE PRIVATE OR COMMERCIAL PILOT (GYROPLANE) WRITTEN EXAMINATION. A knowledge of all the topics mentioned in this outline--not just the mastery of the sample test items--should be used as the criterion for determining that you are properly prepared to take the FAA written examination and meet the knowledge requirements for the Private or the Commercial Pilot Certificate.

The correct responses, with explanations, are presented in Section 2 of this Appendix. Appendix 3 of this booklet contains the supplementary materials required for the solution to the sample test items.

SECTION 1. SAMPLE TEST ITEMS

1. Assume that you have a Commercial Pilot Certificate issued February 1, 1965, and a 2nd Class Medical Certificate dated December 2, 1964. Under these circumstances you could continue to exercise the privileges of
 - 1- a commercial pilot until December 2, 1965, and those of a private pilot until December 2, 1966.
 - 2- a commercial pilot until January 1, 1966, and those of a private pilot until January 1, 1967.
 - 3- either a commercial or private pilot until March 1, 1966.
 - 4- neither a commercial nor private pilot after January 1, 1966.



2. Assume that the above data is displayed on your Sectional Aeronautical Chart adjacent to the symbol of the airport at which you plan to land. From your knowledge of this boxed-in data you should know that to communicate with the control tower you could transmit on

- 1- 119.5 or 122.5 mc and receive on 122.5 mc.
- 2- 119.5 mc and receive on 122.5 mc.
- 3- 119.5 mc only and receive on 119.5 mc.
- 4- 119.5 mc or 122.5 mc and receive on 119.5 mc.

3. The following terminal forecast was issued at 7:00 A.M. for Lafayette:

LAF C1002GF 09C 70C1002GF 11C 70C1003F 13C C1005F--

If LAF lies within a control zone, what is the earliest time you would be able to take off or land in basic VFR conditions?

- 1- 0700 CST.
- 2- 0900 CST.
- 3- 1100 CST.
- 4- 1300 CST.

4. Consider the following Aviation Weather Report for Dayton, Ohio, where the field elevation is 1,008 feet:

DAY 200E40015 003/59/48 1715G20/954

While flying over this airport you would expect to encounter the base of the ceiling at approximately

- 1- 5,000 feet MSL.
 - 2- 4,000 feet MSL.
 - 3- 3,000 feet MSL.
 - 4- 2,000 feet MSL.
5. Using the charts in Appendix 3, pages 7 and 8, consider the following conditions with regard to a jump takeoff:

Field elevation - 2,000 feet	Surface wind	- zero
Temperature - 90° F. (32°C)	Altimeter setting - 29.10	
Gross weight - 1,800 lbs.		

In a jump takeoff, what distance is required to clear a 50-foot obstacle?

- 1- 900 feet.
- 2- 975 feet.
- 3- 1,020 feet.
- 4- 1,150 feet.

6. By use of the chart in Appendix 3, page 7, determine the density altitude at an airport at which the following conditions exist:

Field elevation - 1,200 feet Pressure altitude - 1,500 feet
Temperature - 90° F.(32°C) Altimeter setting - 29.60

What is the density altitude?

- 1- 1,500 feet.
 - 2- 2,500 feet.
 - 3- 3,500 feet.
 - 4- 3,800 feet.
7. In planning a cross-country flight you determine that the total distance is 105 statute miles and that your average groundspeed will be 70 mph. The Gyroplane Flight Manual shows the total fuel capacity is 29.8 gallons with 2.3 gallons unusable. If you start with full fuel tanks and consume 10.5 gallons per hour, how much usable fuel will remain at the completion of the flight?
- 1- 8.7 gallons.
 - 2- 11.7 gallons.
 - 3- 14.0 gallons.
 - 4- 16.1 gallons.

8. You are cruising on a direct course from point A to point B at an airspeed of 70 mph with a direct tailwind of 25 mph. After flying a distance of 50 miles from point A you decide to return. Assuming the same power setting and airspeed is used, the approximate amount of fuel required for the return flight as compared with that required for the outbound flight, would
- 1- be approximately the same.
 - 2- be approximately half as much.
 - 3- be approximately twice as much.
 - 4- not be determinable without the rate of consumption.
9. Any flight maneuver that increases the G load or the load supported by the rotor of a gyroplane will
- 1- increase the rotor disc coning angle and decrease the rotor RPM.
 - 2- increase the rotor disc coning angle and increase the rotor RPM.
 - 3- decrease the rotor disc coning angle and increase the rotor RPM.
 - 4- decrease the rotor disc coning angle and decrease the rotor RPM.
10. Unless the gyroplane is maintained under a progressive inspection system authorized by the Administrator, an annual inspection must be conducted at specified intervals. Completion of that inspection and the return of that gyroplane to service will always be indicated by the
- 1- issuance date of the Airworthiness Certificate.
 - 2- completion date of the 100-hour inspection form.
 - 3- notation in the Aircraft and Engine records.
 - 4- completion of appropriate portions of a Repair and Alteration Form.

SECTION 2. EXPLANATION OF SAMPLE TEST ITEMS

1. (2) A Commercial Pilot Certificate has no specific expiration date and the issuance date is irrelevant to this situation. However, to be valid, the pilot must possess a current appropriate medical certificate. For operations requiring a Commercial Pilot Certificate, the 2nd Class Medical Certificate expires at the end of the last day of the 12th month after the month in which it is issued. Thus, commercial pilot privileges may be exercised until January 1, 1966. For operations requiring only a Private Pilot Certificate, a 2nd Class Medical Certificate expires at the end of the 24th month after the month in which it is issued. In this case, private pilot privileges may be exercised until January 1, 1967. Therefore, only response #2 is correct.

2. (4) The legend for the symbols used on Sectional Charts is found on the back of the charts. The first frequency listed in the boxed data for Dayton is the primary transmitting and receiving VHF frequency for local control. The second frequency is the primary military VHF/UHF frequency. Most FAA towers receive but do not transmit on the standard frequency of 122.5 mc. If this frequency is available it is not shown since it is considered standard. When the tower does not have this frequency it lists a different frequency followed by the letter R indicating that the tower, rather than guarding the standard frequency, is guarding this nonstandard frequency. Responses number 1 and 2 are incorrect because FAA towers do not transmit on 122.5 mc, hence you cannot receive them on that frequency. Number 3 is also incorrect because 119.5 mc is not the only frequency on which to transmit to the tower; the data indicates that the standard frequency is also being guarded. Number 4 is correct since the data indicates you can transmit on 119.5 or 122.5 mc and receive on 119.5 mc.

3. (3) To land or take off within a control zone under basic VFR conditions, FAR requires a ceiling of 1,000 feet or more and at least 3 miles visibility. A ceiling is the lowest layer of clouds or obscuring phenomena that is reported as "broken," "overcast," or "obscuration" and not classified as "thin" or "partial." Reading the IAF forecast we find that at 0700 (issuing time) the ceiling and visibility is predicted to be 1,000 feet broken and 2 miles, which makes response number 1 incorrect. At 0900C the forecast calls for 700 feet scattered, ceiling 1,000 feet broken and 2 miles visibility. This rules out response number 2. The forecast then calls for 700 feet scattered, ceiling 1,000 feet broken and 3 miles visibility at 1100C meeting basic VFR requirements, making response number 3 correct. Since the earliest time at which basic VFR is expected is 1100C, response number 4 is incorrect.

4. (1) The reported ceiling as defined in the explanation of the preceding test item is measured from the surface at the point of observation to the base of the phenomena forming the ceiling. Since the elevation of the surface at Dayton is 1,008 feet MSL and the reported ceiling (the broken layer of clouds) is 4,000 feet above the surface, the base of the clouds constituting the ceiling would be encountered at 5,000 feet MSL. Thus, response number 1 is correct while numbers 2, 3, and 4 are incorrect.
5. (4) Since the jump takeoff chart (Page 8) is based on the pressure altitude of the takeoff field and this information is not given, it must first be determined. This may be found by use of the pressure altitude chart (Page 7). With an altimeter setting of 29.10 we find that 770 feet must be added to the given field elevation of 2,000 feet. The pressure altitude is then 2,770 feet. Now enter the jump takeoff chart at 2,770 feet pressure altitude and move horizontally to intersect the 90° F. temperature curve (interpolate) midway between 80° and 100° curves. From this point move vertically down and read the total takeoff distance to clear a 50-foot obstacle. In this instance we find it to be 1,150 feet as correctly given only in response number 4.
6. (4) Density altitude is pressure altitude corrected for air temperature and greatly affects the performance of all aircraft. With an altimeter setting of 29.60 at a field elevation of 1,200 feet we have a pressure altitude of 1,500 feet which is given. To obtain the density altitude enter the density altitude chart (Page 7) at 32°C. (90°F) outside air temperature and move vertically to the point representing 1,500 feet pressure altitude (midway between the 1,000 feet and 2,000 feet diagonal lines). From this point move horizontally to the left and read the density altitude. With the given conditions we find that the correct density altitude is 3,800 feet as given only in response number 4.
7. (2) This may be solved arithmetically or by use of a slide rule computer. At a groundspeed of 70 mph it will take 1 hour and 30 minutes to travel the distance of 105 miles. In 1 1/2 hours at the rate of consumption of 10.5 gph, the amount of fuel used will be 15.8 gallons. With only 27.5 gallons usable (29.8 - 2.3 = 27.5), the remaining usable fuel at the end of the flight will be 11.7 gallons. Therefore, response number 2 is correct while 1, 3, and 4 are incorrect.

8. (3) At an airspeed of 70 mph with a tailwind of 25 mph, the groundspeed will be 95 mph. Traveling the distance of 50 miles at a groundspeed of 95 mph, the elapsed time outbound would be 32 minutes. After turning around the wind becomes a headwind, reducing the groundspeed to 45 mph. At this groundspeed the return flight of 50 miles would require 1 hour and 7 minutes or slightly more than twice as long as the outbound flight. The rate of fuel consumption will be the same on both portions of flight inasmuch as the power setting is the same. However, since the time involved returning is approximately twice that required for the outbound flight, the fuel required will be nearly doubled. Thus, response number 3 is correct while numbers 1 and 2 are incorrect. Number 4 is also incorrect because with a constant rate of fuel consumption, a comparison of fuel required for each flight can be made on the basis of time involved.
9. (2) An increase in G load or artificial increase in weight increases the force of the upward flow of air through the rotor thereby increasing the rotor RPM. As rotor RPM increases lift also increases thereby deflecting the rotor blades upward, increasing the coning angle. An example of this is when the G load increases during the flare for landing. Therefore, the coning angle will increase and the rotor RPM will increase as stated in correct response number 2, making numbers 1, 3, and 4 incorrect.
10. (3) An Airworthiness Certificate is issued when the aircraft is deemed airworthy at the time of manufacture or after substantial alteration or repair. Only when this certificate has been issued within the preceding 12 months will it indicate compliance with annual inspection requirements. Therefore, response number 1 is incorrect. Number 2 is incorrect because although an annual inspection each 12 months will satisfy 100-hour inspection requirements, a 100-hour inspection will not suffice for an annual inspection. Number 3 is correct because FAR stipulates that appropriate entries be made in maintenance records (logbooks) each time inspection or maintenance is done on the aircraft or engine. Number 4 is also incorrect since the Repair and Alteration Form is used for the description and approval of work done on a repaired or altered aircraft unit.

APPENDIX 3. SUPPLEMENTAL MATERIAL

SECTION 1. OPERATING LIMITATIONS (GYROPLANE FLIGHT MANUAL EXCERPTS)

COMPLIANCE WITH SECTION 1 OF THIS MANUAL IS MANDATORY.

Weight Limitations:

1. Maximum approved gross weight, 1,800 pounds.

Airspeed Limitations:

NOTE: ALL AIRSPEED VALUES GIVEN THROUGHOUT THIS HANDBOOK ARE FOR CALIBRATED AIRSPEED (CAS)

Weight in Lbs.	1,800	1,600
Vne	97 mph	84 mph

MANEUVERING AIRSPEED - V_p - 68 mph CAS.

MAXIMUM ALTITUDE APPROVED FOR TAKEOFF IS 4,000 FT. DENSITY.

Rotor Limitations:

1. Maximum 370 rpm on ground.
2. Maximum rotor brake engagement rpm - 75.
3. Rotor rpm for flight: Minimum 200; Maximum - 320.

Power Plant Limitations - Lycoming Engine O-360-A1D.

1. Fuel octane 100 minimum.
2. Idling rpm 600 to 700.
3. Start clutch engagement - 900-1100 rpm.
4. Maximum operating rpm - 2700.
5. Maximum manifold pressure zero ram - 28.5 inches at 2700.
6. Ground run-up at 1900 rpm and 28.5 inches limited to 2 minutes.

7. Oil pressure, min. at idling 25 psi. Oil pressure max. operating 85 psi.
8. Cylinder head temperature max. 500° F (260° C).
9. Oil temperature - max. 245° F (118° C).

Flight Crew:

1. Minimum crew required is one pilot.

This rotorcraft is approved for day or night VFR flights only. Night flying operations are limited to visual contact flight conditions. Orientation must be maintained through visual reference to ground objects as a result of lights on the ground or adequate celestial illumination.

Placards:

1. This gyroplane must be operated in compliance with the operating limitations specified in the FAA-approved Rotorcraft Flight Manual.
2. No aerobatic maneuvers are permitted.
3. WEIGHT-LBS. 1,800 1,600
V_{ne} 97 84
4. Avoid continuous operation between 2250 - 2500 rpm.
5. Do not engage rotor brake above 75 rpm.
6. Start clutch engagements 900 - 1100 rpm.
7. Maximum altitude approved for takeoff is 4,000 feet density.

SECTION 2. NORMAL OPERATING PROCEDURES (GYROPLANE FLIGHT MANUAL EXCERPTS)

Servicing:

Fuel Minimum Octane 100. Tank capacity 28.4 gallons.
Unusable fuel 1.3 gallons.
Oil Aviation Grade Above 40°F SAE 50
 Below 40°F SAE 30
 Below 10°F SAE 20

Taxiing:

NOTE: ALWAYS TAXI WITH THE BLADES IN DEPITCHED POSITION,
LIMIT TAXIING SPEED TO 5 MPH OVER ROUGH GROUND.

Engine Run-up:

NOTE: DO NOT ATTEMPT TO MAKE A FULL POWER RUN-UP WITH
A DIRECT LEFT CROSSWIND IN EXCESS OF 15 MPH (13 KNOTS).

Clutch Engagement:

NOTE: ALL TAKEOFFS MUST BE MADE BY PREROTATING THE ROTOR.

NOTE: 1100 ENGINE RPM IS THE ABSOLUTE MAXIMUM ALLOWABLE
FOR CLUTCH ENGAGEMENT.

NOTE: TO PREVENT MAIN ROTOR BLADES FROM POUNDING DROOP STOPS
AND CAUSING UNNECESSARY STRAIN AND ROUGHNESS, MAINTAIN
NEUTRAL STICK POSITION ON THE GROUND WITH BLADES ROTATING.

CAUTION: INTERRUPTION OR FAILURE OF ELECTRICAL OR HYDRAULIC
SYSTEM WILL RESULT IN THE ROTOR BLADES GOING INTO
FLIGHT PITCH.

NOTE: MODERATE PITCHING AND ROLLING MOTIONS MAY BE EXPERIENCED
IN AIRCRAFT BETWEEN 80 AND 130 ROTOR RPM DUE TO ROTOR
BLADES BEING OUT OF PATTERN WHILE PASSING THROUGH THIS
ROTOR RPM RANGE. IF THIS SHOULD BECOME EXAGGERATED,
CLOSE THROTTLE, PRESS DEPITCH (DECLUTCH) BUTTON ON
PANEL.

CAUTION: MAXIMUM ALLOWABLE MANIFOLD PRESSURE 28.5 IN. DO NOT EXCEED TWO MINUTES DURATION.

NOTE: FOR IMMEDIATE OR EMERGENCY STOP, CLOSE THROTTLE FULLY, PRESS DEPTCH BUTTON ON PANEL.

Running Takeoff Procedure (normal) - Smooth Terrain:

NOTE: THIS AIRCRAFT WILL NOT TAKE OFF WITH A ROTOR RPM OF LESS THAN 200.

Cruise:

CAUTION: AVOID CONTINUOUS OPERATION BETWEEN 2250 AND 2500 RPM.

For 65% power, 2250 RPM and 22.3" Hg.

For 65% power, 2500 RPM and 21.3" Hg.

For 75% power, 2250 RPM and 24.8" Hg.

For 75% power, 2500 RPM and 23.6" Hg.

NOTE: A ROTOR RPM VARIANCE WILL BE NOTED BETWEEN LIGHT WEIGHT AND MAXIMUM WEIGHT. THIS IS A FUNCTION OF LIFT REQUIRED AND NORMAL FOR THIS AIRCRAFT.

NOTE: IN-FLIGHT-EXCESSIVE USE OF CYCLIC CONTROL WHEN ROTOR RPM FALLS BELOW 200 RPM (OBTAINED BY PUSHING OVER TOP OF A STEEP PULL-UP) MAY RESULT IN EXCESSIVE FLAPPING OF ROTOR BLADES.

NOTE: TURBULENT AIR - IN EXTREME TURBULENCE IT IS RECOMMENDED THAT AIRSPEED BE REDUCED APPROPRIATELY.

Landing:

NOTE: AN AIRSPEED OF LESS THAN 50 MPH MAY BE USED ABOVE 300 FEET ABOVE GROUND. BELOW 300 FEET 50 MPH OR MORE SHOULD BE MAINTAINED DEPENDING UPON ATMOSPHERIC CONDITIONS AND LANDING WEIGHT.

Crosswind Landing:

NOTE: THIS ROTORCRAFT HAS DEMONSTRATED SATISFACTORY LANDING AND TAKEOFF CHARACTERISTICS IN 90° CROSSWINDS UP TO 20 MPH.

Touchdown Speed:

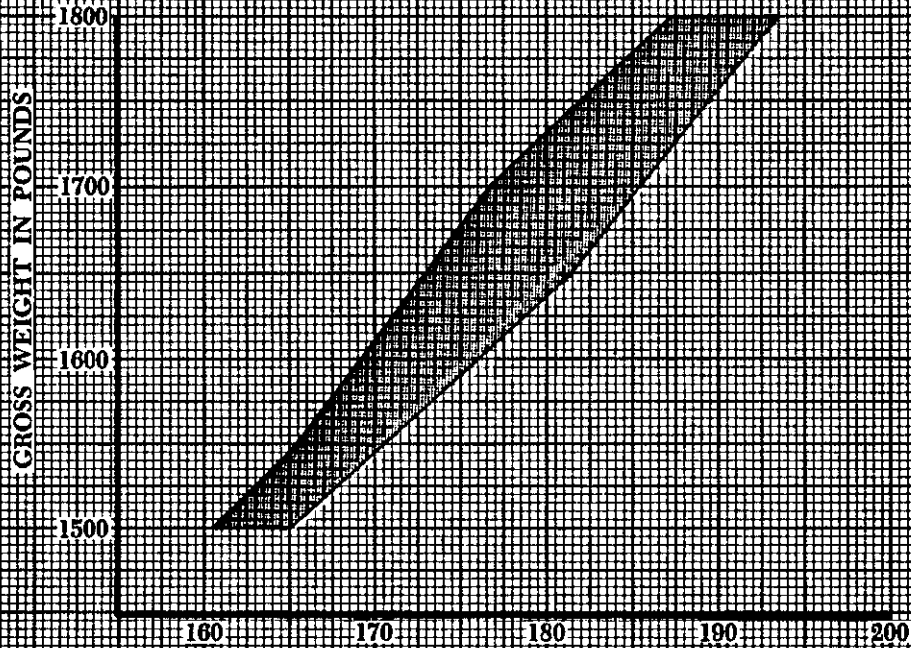
NOTE: TOUCHDOWN SPEEDS UP TO 65 MPH TAS HAVE BEEN DEMONSTRATED
TO BE SAFE.

MINIMUM LEVEL FLIGHT SPEED - 27 MPH.

WEIGHT AND BALANCE

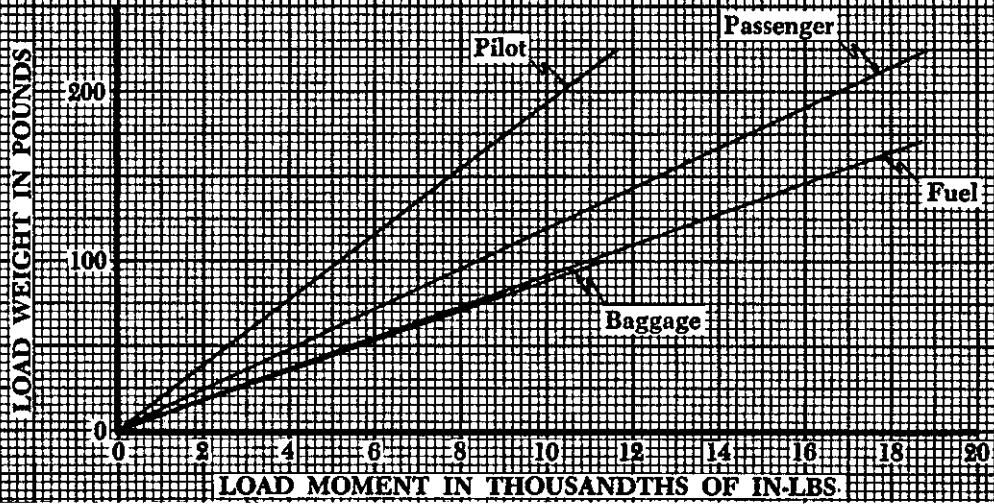
	<u>Weight</u>	<u>Moment</u>
BASIC WEIGHT (with oil)	<u>1315</u>	<u>153.9</u>
PILOT	_____	_____
PASSENGER	_____	_____
FUEL (6 lbs. per gal.)	_____	_____
BAGGAGE	_____	_____
GROSS WEIGHT	_____	_____

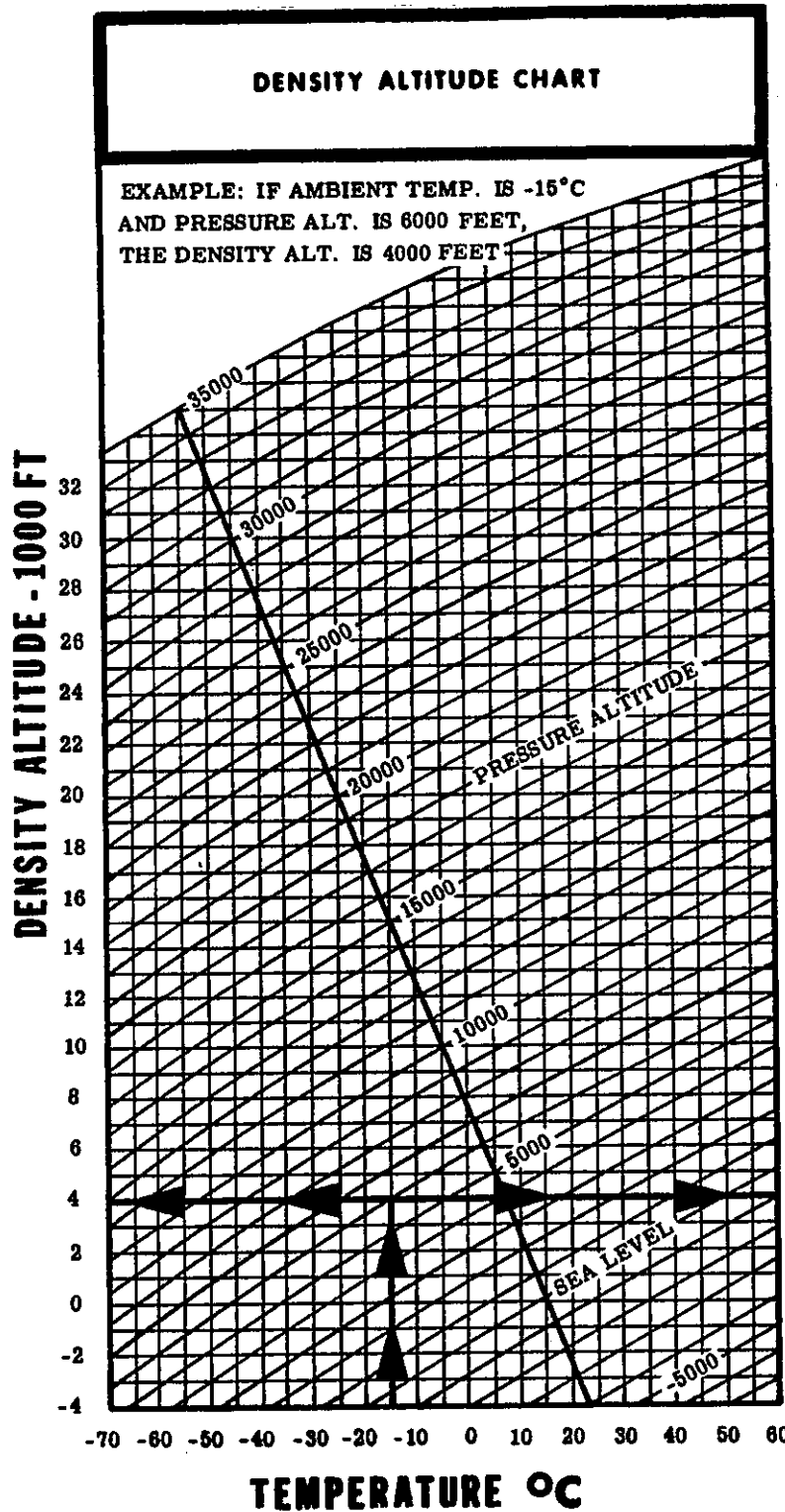
CENTER OF GRAVITY ENVELOPE



GROSS MOMENT IN THOUSANDTHS OF IN-LBS.
Both the gross weight and the gross weight moment must fall within the above envelope.

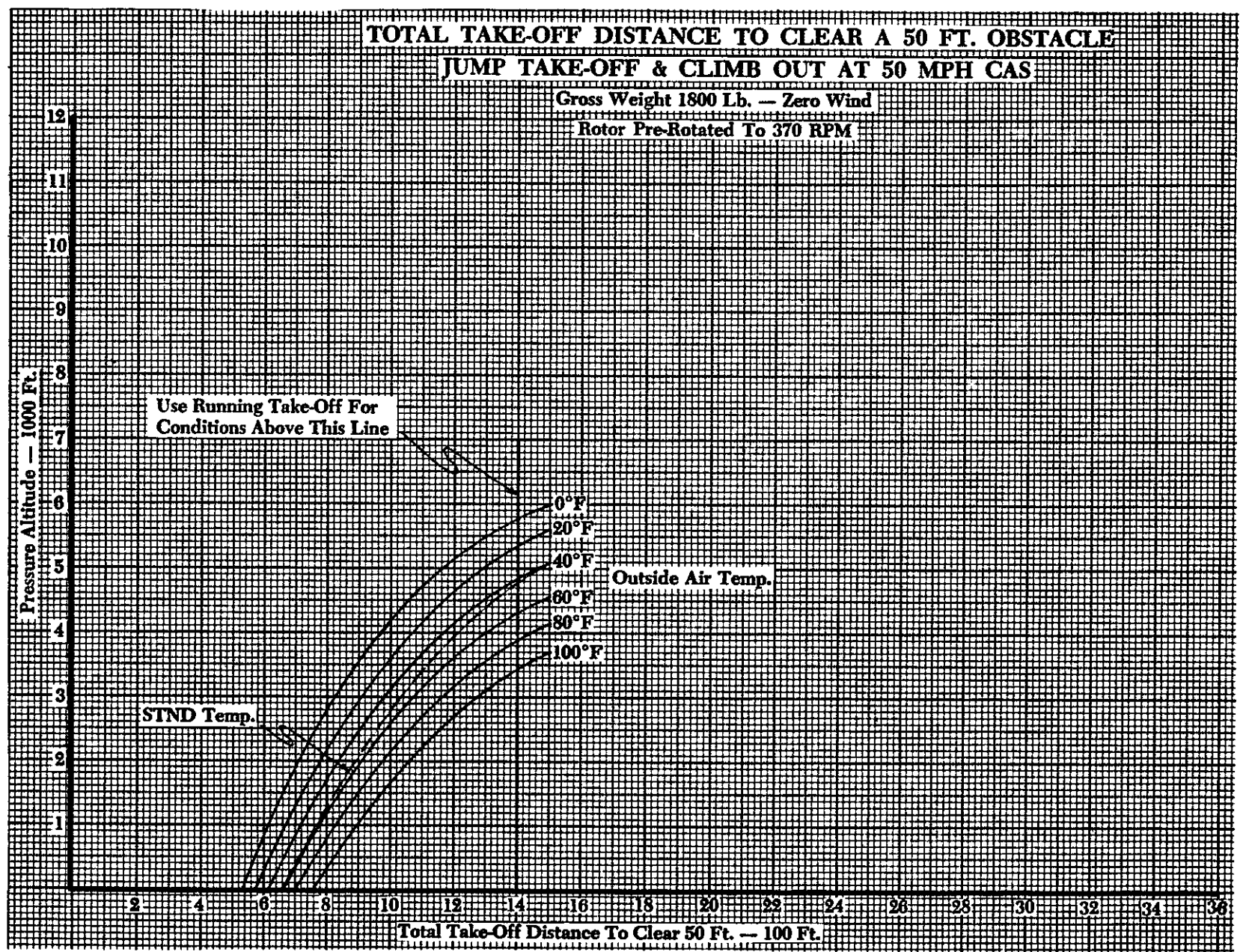
LOADING GRAPH





Altitude Setting in Hg.	Altitude Addition For Obtaining Pressure Altitude
28.0	1,825
28.1	1,725
28.2	1,630
28.3	1,535
28.4	1,435
28.5	1,340
28.6	1,245
28.7	1,150
28.8	1,050
28.9	955
29.0	865
29.1	770
29.2	675
29.3	580
29.4	485
29.5	390
29.6	300
29.7	205
29.8	110
29.9	20
29.92	0
30.0	-75
30.1	-165
30.2	-255
30.3	-350
30.4	-440
30.5	-530
30.6	-620
30.7	-710
30.8	-805
30.9	-895
31.0	-965

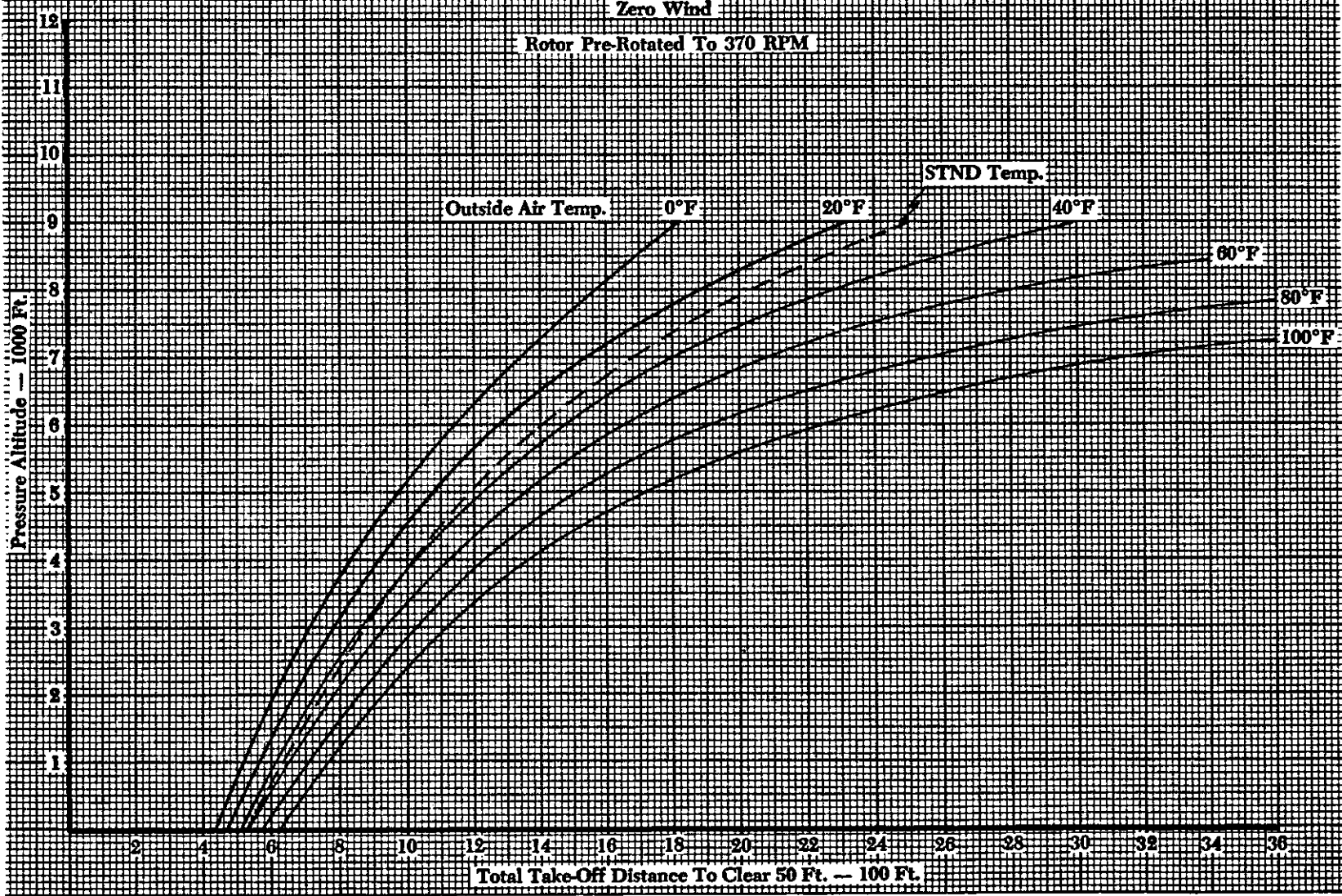
SET ALTIMETER TO 29.92 IN. Hg. WHEN READING PRESSURE ALTITUDE.



TOTAL TAKE-OFF DISTANCE TO CLEAR A 50 FT. OBSTACLE
RUNNING TAKE-OFF TO 30 MPH & CLIMB
OUT AT 50 MPH CAS — GROSS WEIGHT 1800 LB.

Zero Wind

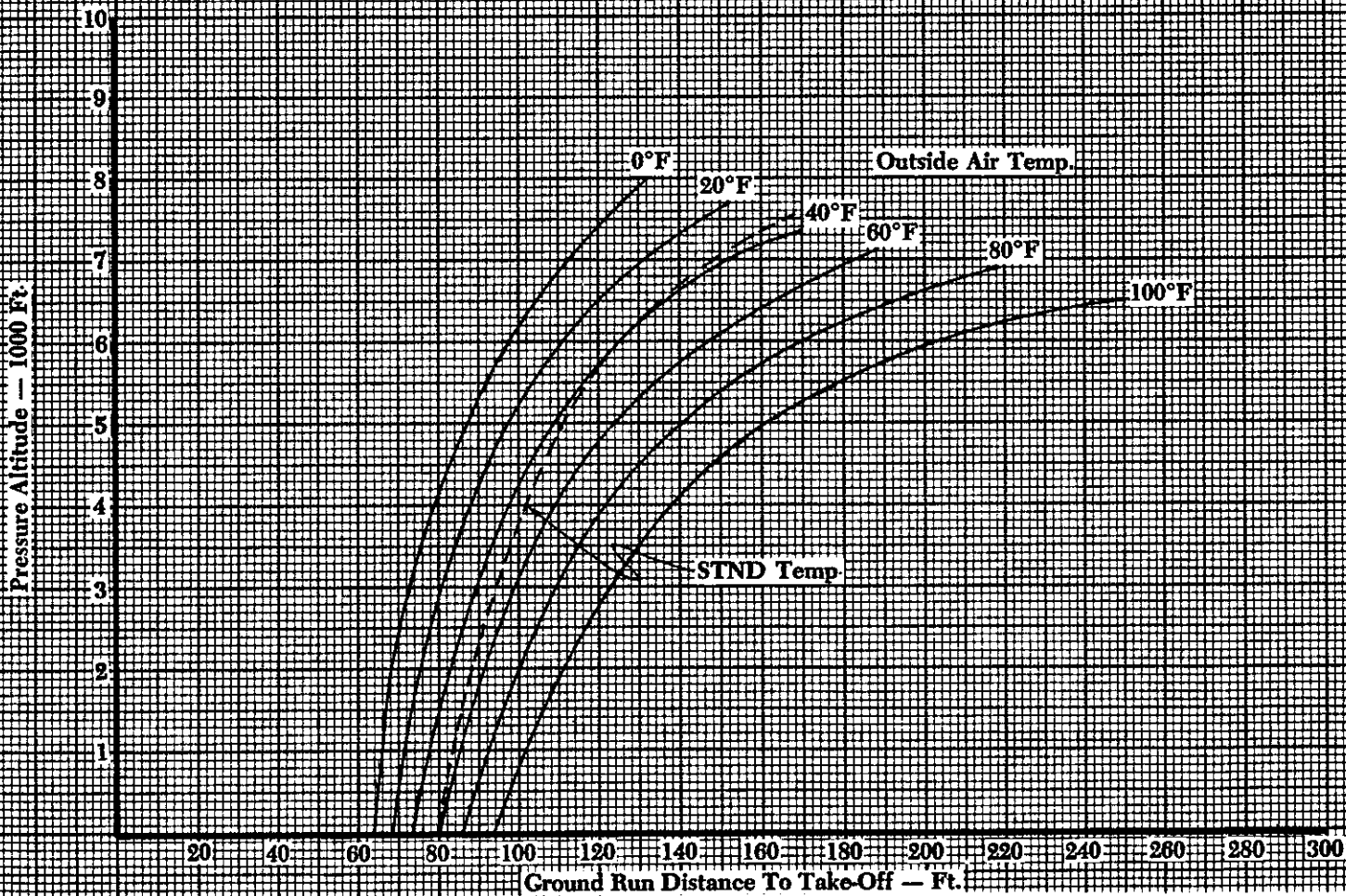
Rotor Pre-Rotated To 370 RPM

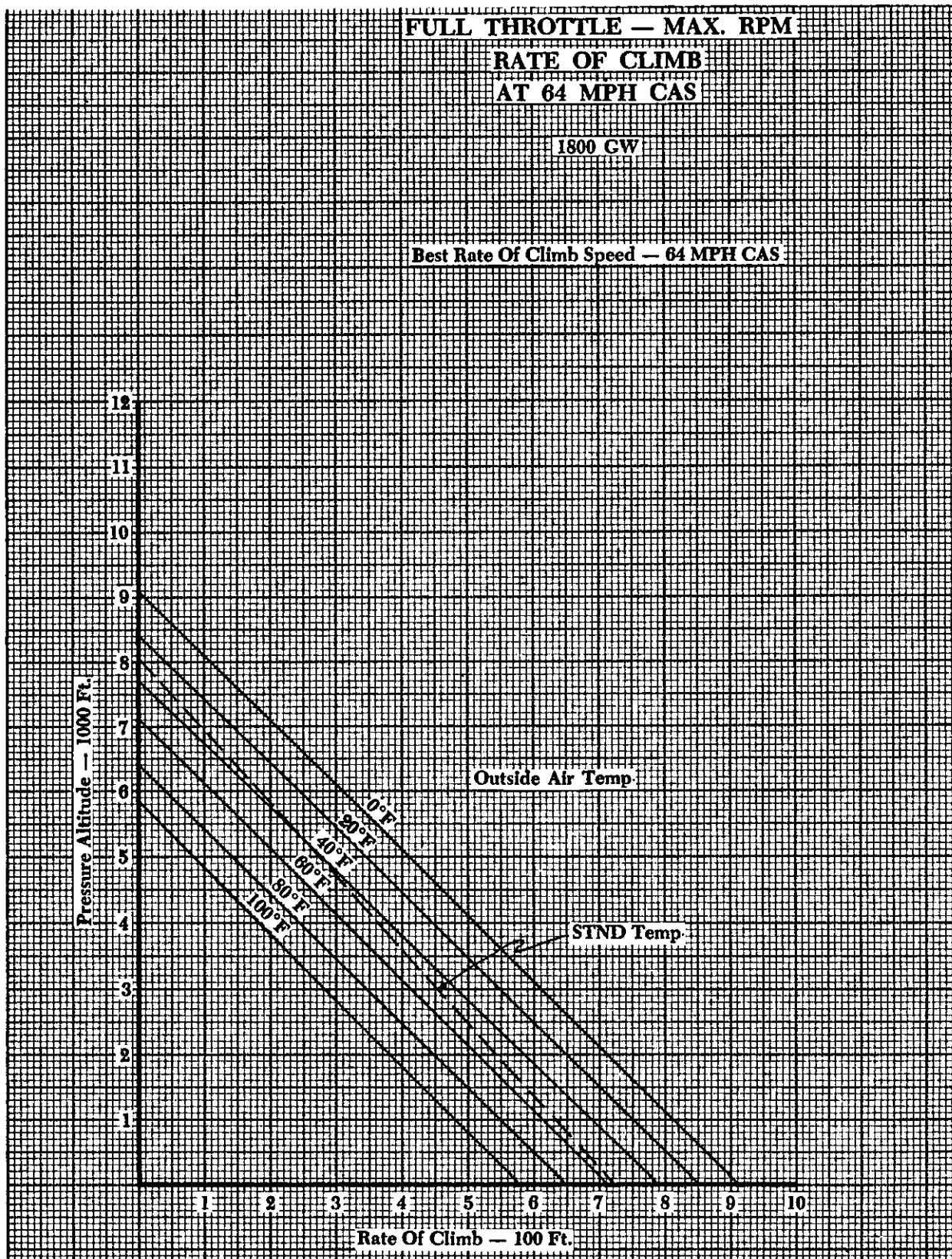


GROUND RUN DISTANCE FOR TAKE-OFF AT 30 MPH CAS

Gross Weight 1800 Lb. — Zero Wind

Rotor Pre-Rotated To 370 RPM





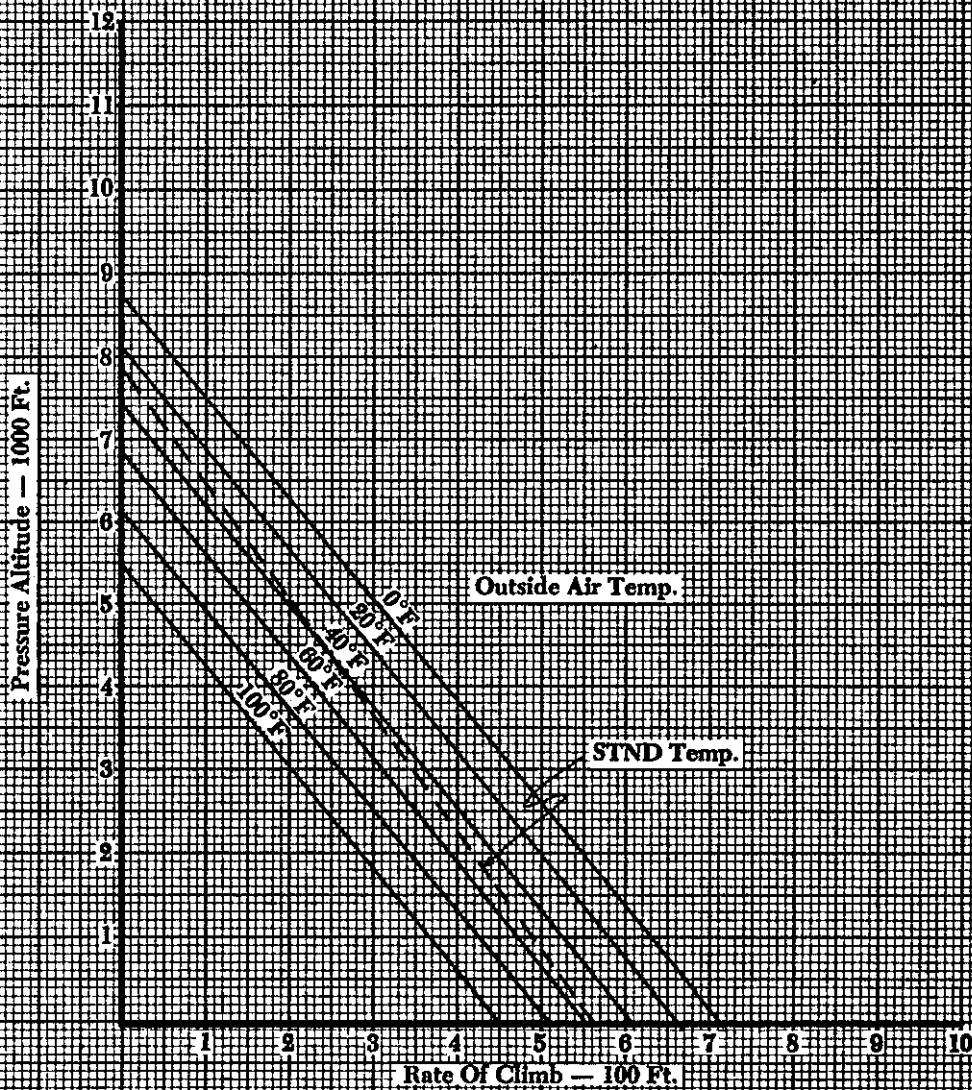
FULL THROTTLE — MAX. RPM

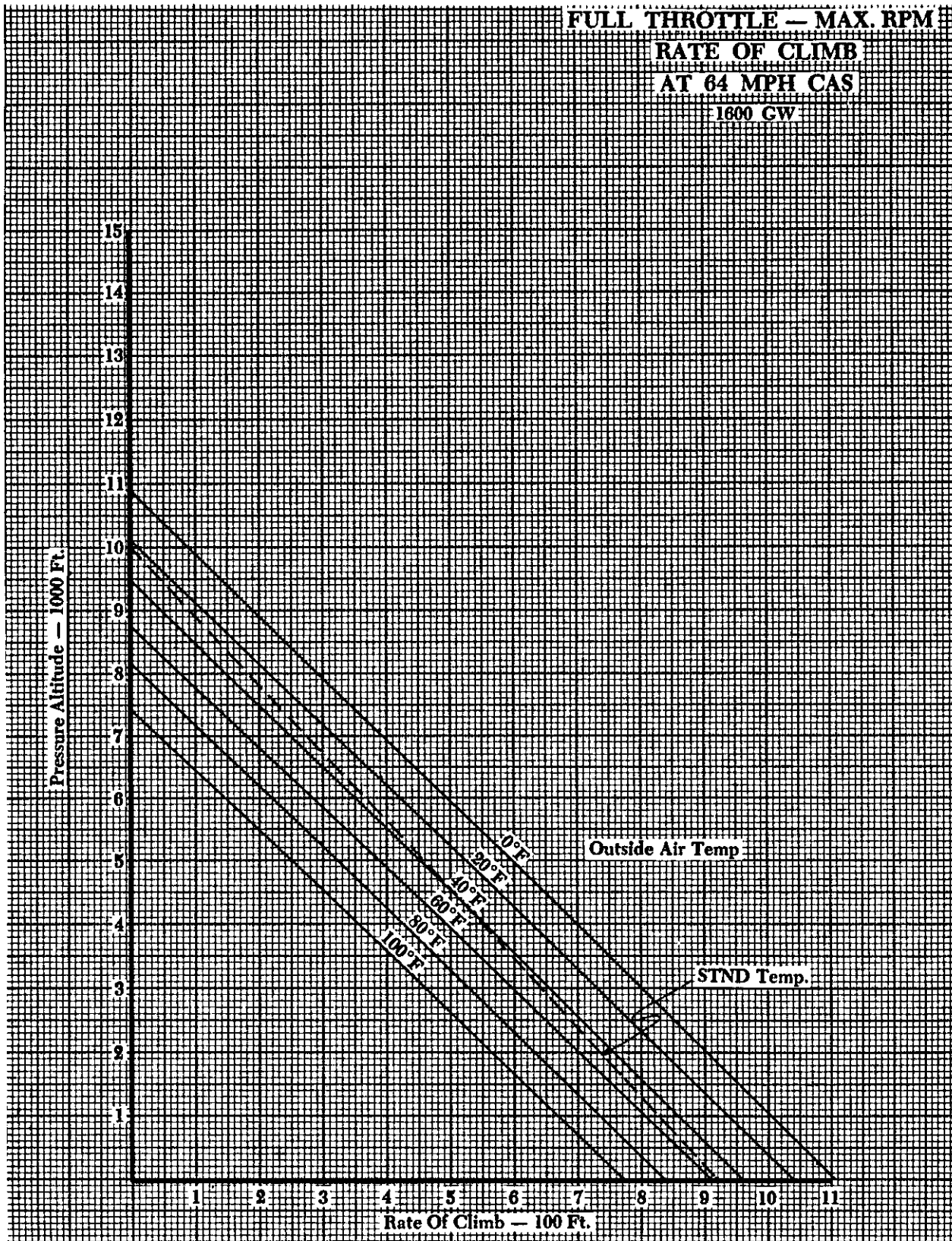
RATE OF CLIMB

AT 50 MPH CAS

1800 GW

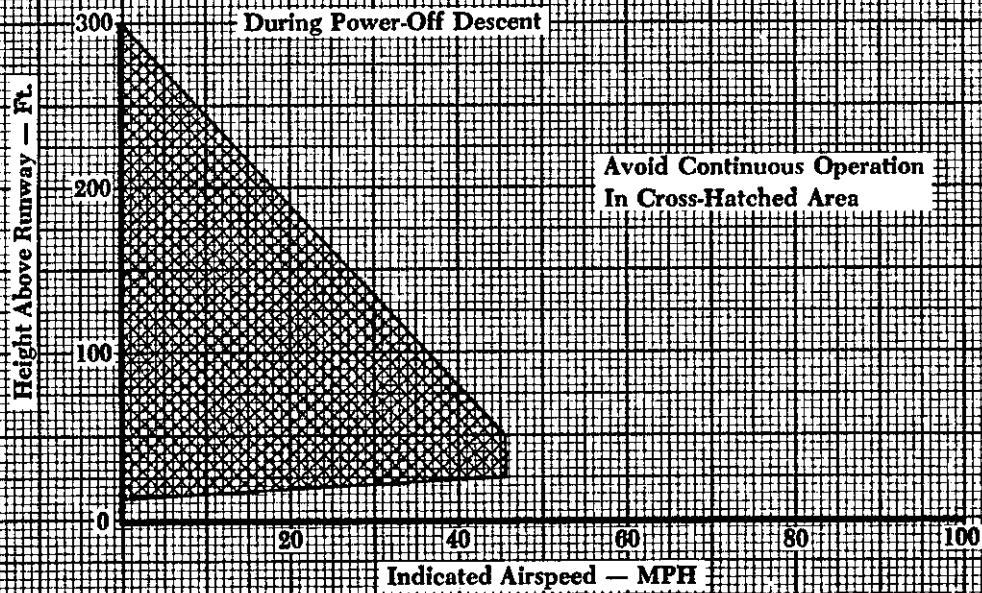
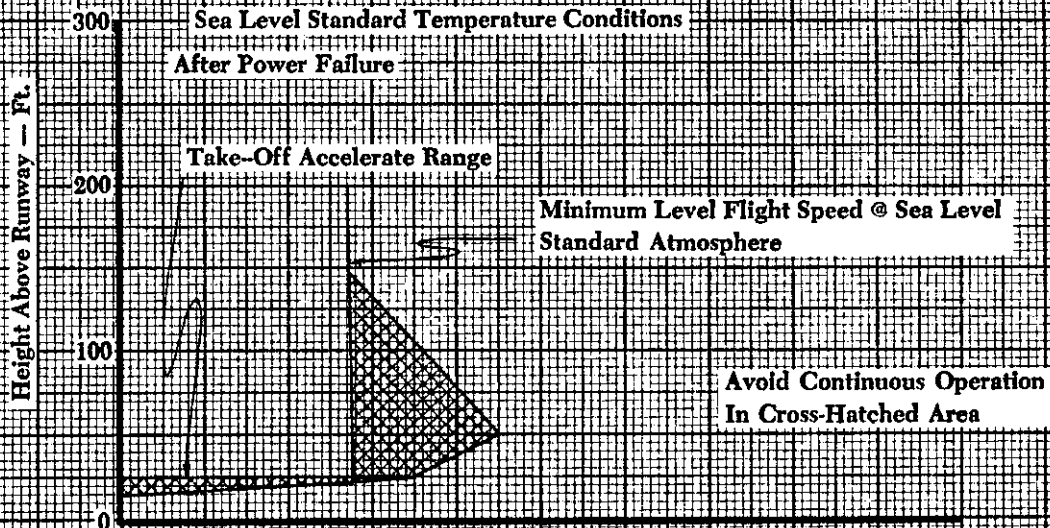
Best Climb-Out Speed To Clear
Obstacle — 50 MPH CAS

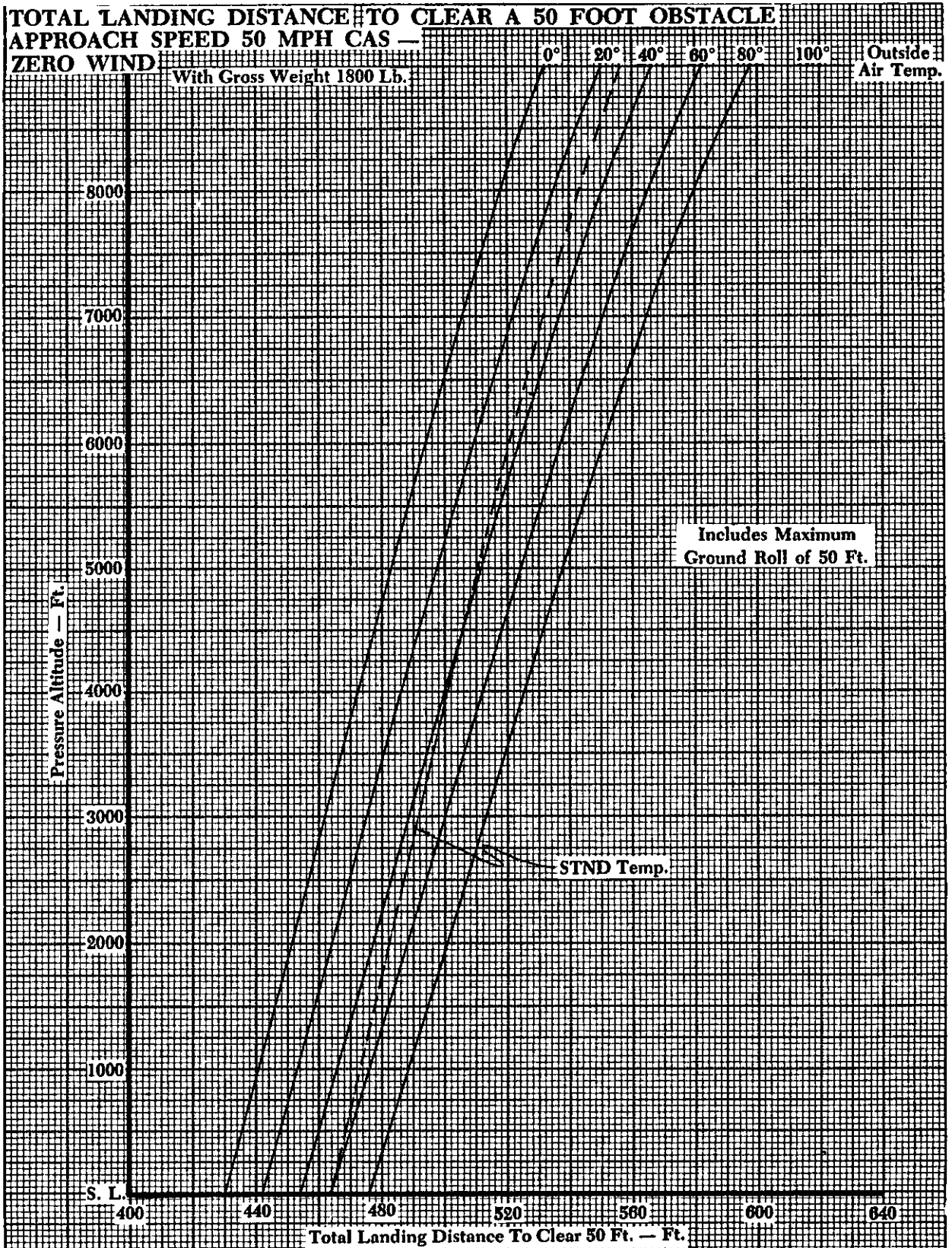




HEIGHT VS. VELOCITY FOR SAFE LANDING

Gross Weight 1800 Lbs.
Zero Wind





AIRPORT/FACILITY DIRECTORY LEGEND

LOCATION

The airport location is given in nautical miles (to the nearest mile) and direction from center of referenced city.

ELEVATION

Elevation is given in feet above mean sea level and is based on highest usable portion of the landing area. When elevation is sea level, elevation will be indicated as "00." When elevation is below sea level, a minus sign (-) will precede the figure.

RUNWAYS

The runway surface, length, reciprocal headings, and weight bearing capacity are listed for the longest instrument runway or sealane, or the longest active landing portion of the runway or strip, given to the nearest hundred feet, using 70 feet as the division point, i.e., 1468 feet would be shown as "14"; 1474 feet would be shown as "15." Runway lengths prefixed by the letter "H" indicates that runways are hard surfaced (concrete; asphalt; bitumen, or macadam with a seal coat). If the runway length is not prefixed, the surface is sod, clay, etc. The total number of runways available is shown in parentheses. (However, only hard surfaced runways are counted at airfields with both hard surfaced and soil runways.)

RUNWAY WEIGHT BEARING CAPACITY

Add 000 to figure following S, T, TT and MAX for gross weight capacity, e.g., (S-000).

S—Runway weight bearing capacity for aircraft with single-wheel type landing gear. (DC-3), etc.

T—Runway weight bearing capacity for aircraft with twin-wheel type landing gear. (DC-8), etc.

TT—Runway weight bearing capacity for aircraft with twin-tandem type landing gear. (707), etc.

Quadricycle and twin-tandem are considered virtually equal for runway weight bearing considerations, as are single-tandem and twin-wheel.

A blank space following the letter designation is used to indicate the runway weight bearing capacity to sustain aircraft with the same type landing gear, although definite figures are not available, e.g., (T-).

MAX—Maximum runway gross weight bearing capacity for all aircraft.

Omission of weight bearing capacity indicates information unknown. Footnote remarks are used to indicate a runway with a weight bearing greater than the longest runway.

SEAPLANE BASE FACILITIES

A number preceding the parenthetical designation, indicates the number (quantity) available.

Beaching gear, consisting of the quantity and type of beaching gear available.

The number (quantity) if available, of Mooring Buoys (MB) and Crash Buoys (CB) available. MB & CB indicates details of quantity are not available.

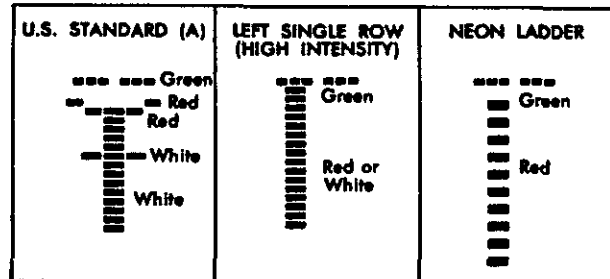
LIGHTING

B: Rotating Light (Rotating beacon). (Green and white, split-beam and other types.) Omission of B indicates rotating light is either not available or not operating standard hours (sunset-sunrise).

NOTE.—Code lights are not coded, and are carried in Remarks.

L: Field Lighting (when code L4-7 is indicated, lighting 4, 5, 6, 7 is available). An asterisk (*) preceding an element indicates that it operates on prior request only (by phone call, telegram or letter). Where the asterisk is not shown, the lights are in operation or available sunset to sunrise or by request (circling the field or radio call). L by itself indicates temporary lighting, such as flares, smudge pots, lanterns.

- 1—Strip lights or portable runway lights (electrical)
- 2—Boundary
- 3—Runway Floods
- 4—Low Intensity Runway
- 5—Medium Intensity Runway
- 6—High Intensity Runway
- 7—Instrument Approach (neon)
- 8A, B, or C—High Intensity Instrument Approach



- 9—Sequence Flashing Lights (3,000' out unless otherwise stated)
- 10—Visual Approach Slope Indicator (VASI)
- 11—Runway end identification lights (threshold strobe) (REIL)
- 12—Short approach light systems (SALS)

IV-A-II

AIRPORT/FACILITY DIRECTORY

AIM-

Lighting (Con't)

- 13—Runway alignment lights (RAIL)
- 14—Runway centerline
- 15—Touchdown zone

Because the obstructions on virtually all lighted fields are lighted, the obstructions lights have not been included in the codification.

SERVICING

- 51: Storage.
- 52: Storage, minor airframe repairs.
- 53: Storage, minor airframe and minor powerplant repairs.
- 54: Storage, major airframe and minor powerplant repairs.
- 55: Storage, major airframe and major powerplant repairs.

FUEL

- F1 80 oct., at least.
- F2 80/87 oct., or lower.
- F3 91/98 oct., or lower.
- F4 100/130 performance rating, or lower.
- F5 115/145 performance rating, or lower.

TURBINE FUELS

- TP-1 050 turbine fuels for civil jets.
- JP-1 (Kerosene), JP-3, JP-4, JP-5.

DAYLIGHT SAVING TIME

An airport located in a geographic area which normally converts to daylight saving time will be so identified by use of a code.

The two most common time periods during which daylight time is in effect in the conterminous United States are April 25-September 26 and April 25-October 31, and these are indicated as DT 1 and DT 2 respectively. The code "DT" by itself indicates that daylight time is in effect but not on the common time periods of DT 1 or DT 2. In such cases the applicable time period is footnoted in the airport remarks section.

Reference to daylight time will remain in the Airport Directory continuously.

OTHER

- AOE—Airport of Entry.
- VASI—Visual Approach Slope Indicator, applicable runway provided.
- RVV—Runway visibility, applicable runway provided.
- RVR—Runway Visual Range, applicable runway provided.
- TPA—Traffic Pattern Altitude—This information is provided only at those airports without a 24-hour operating control tower or without an FSS providing Airport Advisory Service. Directions of turns are indicated only when turns of the pattern(s) are to the right (non-standard). TPA data are related to the runway listed under the tabulated airport information. Generally, only one altitude is listed; however, at some airports two altitudes have been established; one for conventional aircraft and one for high performance aircraft. They are shown in this manner, TPA 8/15-R (increments of 100 feet). The higher figure being the higher performance aircraft altitude.

FSS—The name of the controlling FSS is shown in all instances. When the FSS is located on the named airport, "on fld" is shown following the FSS name. When the FSS can be called through the local telephone exchange, (Foreign Exchange) at the cost of a local call, it is indicated by "(LC)" (local call) with the phone number immediately following the name of the FSS, i.e., "FSS: WICHITA (LC481-5867)." When an Intephone line exists between the field and the FSS, it is indicated by "(DL)" (direct line) immediately following the name of the FSS, i.e., "FSS: OTTO (DL)."

AIRPORT REMARKS

"FEE" indicates landing charges for private or non-revenue producing aircraft. In addition, fees may be charged for planes that remain over a couple of hours and buy no services, or at major airline terminals for all aircraft.

"Rgt #c 13-31" indicates right turns should be made on landings and takeoffs on runways 13 and 31.

Limited—Intended for private use, but use by public is not prohibited.

Remarks data is confined to operational items affecting the status and usability of the airport, traffic patterns and departure procedures.

Obstructions.—Because of space limitations only the more dangerous obstructions are indicated. Natural obstructions, such as trees, clearly discernible for contact operations, are frequently omitted. On the other hand, all pole lines within at least 15:1 glide angle are indicated.

COMMUNICATIONS

Clearance is required prior to taxiing on a runway, taking off, or landing at a tower controlled airport.

When operating at an airport where the control tower is operated by the U.S. Government, two-way radio communication is required unless otherwise authorized by the tower. (When the tower is operated by someone other than the U.S. Government, two-way radio communication is required if the aircraft has the necessary equipment.)

Frequencies transmit and receive unless specified as:
T—Transmit only, R—Receive only, X—On request.
Primary frequencies are listed first in each frequency grouping, i.e., VHF, LF. Emergency frequency 121.5 is available at all TOWER, APPROACH CONTROL and RADAR facilities, unless indicated otherwise by a cross-out: 121.5—

AIM- **AIRPORT/FACILITY DIRECTORY** IV-A-III

Radar available is listed under "RADAR SERVICES". Radar beacons are indicated by "(BCN)" after "RADAR SERVICES", when available.

VOICE CALL

The voice call for contact with the traffic control services listed at each airport is the airport name followed by the call of the particular service desired, i.e., "LAGUARDIA TOWER." In these instances, only the name of the service is listed. When the voice call of the facility is not the same as the airport name, the complete voice call is listed.

SERVICES AVAILABLE

(See ATC Operations and Procedures, Section II)

TOWER

- Clearance Delivery (CLRNC DEL).
- Approach Control (APP CON) Radar and Non-Radar.
- Departure Control (DEP CON) Radar and Non-Radar.
- VFR Advisory Service (VFR ADV) Non-Radar.
- Traffic Information Service (TFC INFO) Radar.

- Surveillance Radar Approach (ASR).
- Precision Radar Approach (PAR).
- Ground Control (GND CON).
- VHF Direction Finding (VHF/DF).

RADAR APPROACH PROCEDURE MINIMA

Weather minima for precision and surveillance radar approaches (PAR/ASR) specify only the lowest straight-in authorized for the approach.

FLIGHT SERVICE STATION (FSS)

- Airport Advisory Service (AAS).
- Flight Following Service.
- Island, Mountain and Lake Reporting Service.

UNICOM

Private aeronautical station, operates same hours as the airport, transmits and receives on one of the following frequencies:

- U-1—122.8 mc (at airports without a control tower).
- U-2—123.0 mc (at airports with a control tower).

SAMPLE

The diagram shows an airport directory entry for 'STATE NAME' with various fields and their meanings indicated by arrows:

- Location (NM from city)**: Points to 'ENE' in 'ENE AOE FSS'.
- Runway Weight Bearing Capacity**: Points to '55' in '55' P2-4,6'.
- No. of Runways**: Points to '3' in '3.4'.
- Runways**: Points to 'H55/B-26(3)'.
- IFR Airport**: Points to 'IFR'.
- Airport of Entry**: Points to 'AOE'.
- Lighting**: Points to 'F2-4,6'.
- Servicing**: Points to 'FUEL'.
- Fuel**: Points to 'FUEL'.
- Runway Visibility Range**: Points to 'RVR: Rwy 36'.
- Runway Visibility Value**: Points to 'RVR: Rwy 36'.
- Airport Elevation**: Points to '5331'.
- Daylight time and period of duration**: Points to '(U-2) DT-1'.
- UNICOM**: Points to 'UNICOM'.
- Radio Aids**: Points to 'ILS 110.3 I-FST'.
- Transcribed Weather Broadcasts (TWEB)**: Points to 'RBN BHZ 326 A'.
- VOR Test Signal**: Points to 'VOR'.

STATE NAME
CITY NAME
AIRPORT NAME IFR 3.4 ENE AOE FSS: NAME (ILC4815867)
 5331, H55/B-26(3) (S-100, T-200, TT-400) BL6-8,10 55' P2-4,6
 (U-2) DT-1
 VASI: Rwy 13 TPA: 9/16-R RVV: Rnws 18/15 RVR: Rwy 36
 Remarks: Ltd use, Fee: \$1.50 acct over 2,000 lbs., FAA Dep Proc—
 No turns until reaching 2,000' MSL. Rwy 8-26 closed UFN.
 TOWER 118.1 122.5R 257.8 278T 3023.5R
 CLEARANCE DELIVERY 127.7
 GND CON 121.9 348.6 VFR ADV 125.6
RADAR
 APP CON 119.5 125.6 137.88 257.8
 DEP CON 126.2
 TFC INFO Ctc APP CON on 125.6 25 mi out
 PAR* Rwy 11 Ceil 200 Vis 1/2 mi Min Alt 5531
 ASR Rwy 35 Ceil 500 Vis 2 mi Min Alt 5831
 ILS 110.3 I-FST Apch Brng 078° BC unusable
 (M) BVORTAC 115.6/PHP 256° 5.3 NM to Fid
 RBN BHZ 326 A /PHP 264° 1.5 NM to Fid
 Remarks: VOT: 108.2 VHF/DF available, contact tower. *PAR
 avail on 15 min notice dur VFR wx conditions.
 ALL BEARINGS/RADIAL ARE MAGNETIC.
 ALL TIMES ARE GMT EXCEPT AS NOTED

IV-A-iv

AIM-

RADIO CLASS DESIGNATIONS

Identification of VOR/VORTAC/TACAN Stations by Class (Operational Limitations):

Class	Normally Anticipated Altitude Service	Normally Anticipated Interference-Free Distance Service
H	Up to 45,000 MSL Above 45,000' MSL	149.75 smi (130 nmi) 115.2 smi (100 nmi)
L	Up to 18,000' MSL	46.06 smi (40 nmi)
T	Up to 12,000' MSL	28.79 smi (25 nmi)

H=High L=Low T=Terminal

NOTE: An H facility is capable of providing L and T service volume and an L facility additionally provides T service volume.

The term VOR is, operationally, a general term covering the VHF omnidirectional bearing type of facility without regard to the fact that the power, the frequency-protected service volume, the equipment configuration, and operational requirements may vary between facilities at different locations.

AB	Continuous automatic transcribed broadcast service.
B	Scheduled Broadcast Station (broadcasts weather at 15 and 45 minutes after the hour; Air Force Broadcasts, generally, 29 minutes).
DME	UHF standard (TACAN compatible) distance measuring equipment.
H	Non-directional radio beacon (homing), power 50 watts to less than 2,000 watts.
HH	Non-directional radio beacon (homing), power 2,000 watts or more.
H-SAB	Non-directional radio beacons providing automatic transcribed weather service.
ILS	Instrument Landing System (voice on localizer channel).
LMM	Compass locator station when installed at middle marker site.
LOM	Compass locator station when installed at outer marker site.
MA	Range (adcock, vertical radiators), power less than 50 watts.
MH	Non-directional radio beacon (homing) power less than 50 watts.

ML	Range (loop radiators), power less than 50 watts.
MRA	Range (adcock, vertical radiators), power 50 watts or more but less than 150 watts.
MRL	Range (loop radiators), power 50 watts or more, but less than 150 watts.
RA	Range (adcock, vertical radiators), power 150 watts or more.
RL	Range (loop radiators), power 150 watts or more.
S	Simultaneous range, homing signal and/or voice.
SABH	Non-directional radio beacon having limited navigational use. Provides automatic weather broadcasts.
TACAN	UHF navigational facility—omnidirectional course and distance information.
VOR	VHF navigational facility—omnidirectional, course only.
VOR/DME	Collocated VOR navigational facility and UHF standard distance measuring equipment.
VORTAC	Collocated VOR and TACAN navigational facilities.
W	With voice facilities on range frequency.
Z	VHF station location marker at a LF range station.

NOTES

1. All FAA MH facilities operate continuously unless otherwise cited.
2. All FAA ranges operate continuously. Those which are not manned continuously are cited in the remarks with hours of operation in parentheses, e.g., (0600-2400).
3. LMF and VHF ranges listed at the same location are controlled by the same FSS.
4. Military navigational facilities which are not part of the common system are not listed in this publication.

AIRPORT DIRECTORY

*** IOWA ***

ALGONA MUNI 1 NW
1219 H22 (1) BL4 S5 F4 U-1 FSS: MASON CITY
Remarks: 3300' strip avbl. P-line NE.

HAWARDEN MUNI Adj 5
1174 23 (3) L4 F2

LeMARS 2 SW
1195 H30 (2) BL4 S5 F4 U-1 FSS: SIOUX CITY
Remarks: P-line SE. NW/SE rwy permly clsd.

ROCK RAPIDS MUNI 2 NW
1360 25 (1) L4
Remarks: P-line N, S.

SIOUX CITY MUNI See Section IV-A

*** NEBRASKA ***

ABBOTT See ALMERIA

AINSWORTH MUNI 6 NW
2580 H77 (1) BL4 S5 F4 FSS: OMAHA (1300-0100Z)
FSS: GRAND ISLAND (0100-1300Z)
Remarks: Fuel avbl prior request after 7:00 PM.

ALLIANCE MUNI IFR 4 SE
3930, H92 (4) BL4 S5 F4, JP4 FSS: SCOTTSBLUFF (DL)

ALMERIA
ABBOTT 4 NW
2365 31 (1)

BINGHAM
SPADE RANCH 17 N
3860 28 (3) F2 U-1

CREIGHTON MUNI 1 NE
1625 24 (2) BL4 F2 FSS: GRAND ISLAND

MILLER FIELD See VALENTINE

NELIGH MUNI 1 SW
1745 31 (2) BL4 S1 F2 FSS: GRAND ISLAND
Remarks: Ruf gopher holes. P-line SE.

NORFOLK
STEFAN FLD MUNI IFR 3 SW
1571 H58 (2) BL5 F4 FSS: OMAHA

O'NEILL MUNI 2 NW
2030 H35 (1) BL4 F4 FSS: GRAND ISLAND
Remarks: P-lines SW.

NEBRASKA—Continued

SOUTH SIOUX CITY
MARTIN FLD 2 W
1100 H40 (1) *L4 S5 F4 U-1 FSS: SIOUX CITY (LC B-1060)
Remarks: P-line SE. Rpt t/c SE.

SPADE RANCH See BINGHAM

STEFAN FLD MUNI See NORFOLK

VALENTINE
MILLER FLD 1 S
2586 H50 (2) BL4 S1 F4 U-1 FSS: OMAHA (DAYS) PIERRE (LD NIGHTS)

*** SOUTH DAKOTA ***

ABERDEEN MUNI IFR 3 E
1301 H58 (2) BL4, 6 S5 F4 FSS: ABERDEEN on Fld
Remarks: Attended on prior request after 9:00 PM. Rwy 12
threshold displaced 668'.

CLIFF'S AERO SERVICE See PARKSTON

COLMAN
SIOUX VALLEY 1 E
1678 26 (1) FSS: HURON

MENNO 1 E
1350 25 (2) *L4 S1 F2 FSS: HURON
Remarks: P-line S.

MILBANK MUNI 3 E
1150 32 (2) L4 F4 FSS: WATERTOWN
Remarks: P-line NE. Lgts on request after 0700.

MILLER MUNI 1 E
1573 H28 (1) BL4 S5 F2 FSS: HURON
Remarks: P-line S.

MITCHELL MUNI 4 N
1302 H67 (2) BL5 F4 FSS: HURON

PARKER 1 NE 1340 25 (2)
Remarks: P-lines SE & SW. FSS: HURON

PARKSTON MUNI 1 SE
1416 30 (1) BL4 FSS: HURON

SIOUX CITY GRAHAM FLD See NORTH SIOUX CITY

SIOUX FALLS FOSS FLD See Section IV-A

SIOUX VALLEY See COLMAN

YANKTON MUNI 2 N
1294 H40 (2) BL4 F4 FSS: HURON
Remarks: Twr 3 E.

EXCERPTED

AIRPORT/FACILITY DIRECTORY

*****IOWA*****

CEDAR RAPIDS MUNI IFR 5 SSW FSS: CEDAR RAPIDS on Fld 863 H70/8-26 (2) (S-100, T-135, TT-) BL4, 6 8A, 9 5-5 F5, TF-1 U2
REMARKS: Eastern N/S txwy 1500x75' and sod areas avbl as rwy dur strang N/S winds. Attended 6 AM-12:30 AM thereafter by phone.
TOWER 118.7 122.5R 117.6T 109.3T 278T
GND CON 121.9 VFR ADV Cfc APP CON on 119.9
APP CON 119.9 122.5R 118.7 117.6T 109.3T 278T
ILS¹ 109.3 I-CID Apch Brng 085° LOM: 326/CT
(L) BVORTAC 117.6/CID 088° 2.8 NM to fld
REMARKS: Glide slope unusable below 1047' MSL. BC unusable

ESTERVILLE (L) VOR 110.4/EST FSS: MASON CITY
FORT DODGE (H) BVORTAC 113.5/FOD FSS: MASON CITY
IOWA CITY (L) BVOR 111.0/IOW FSS: CEDAR RAPIDS
JACKSON RBn MHW 233/JKN FSS: SIOUX CITY
KEOKUK RBn MHW 366/EOK
LAMONI (H) BVOR 116.7/LMN FSS: DES MOINES
MASON CITY (H) BVORTAC 114.9/MCW FSS: MASON CITY
NEOLA (L) BVORTAC 117.1/EOL FSS: OMAHA
NEWTON (L) BVOR 112.5/TNU FSS: DES MOINES
OTTUMWA (L) BVORTAC 111.6/OTM FSS: OTTUMWA

SIOUX CITY MUNI IFR 6 S FSS: SIOUX CITY on Fld 1097 H90 13-31 (3) (Max 2.25) BL4, 6, 8A, 9, 11 5-5 F5, JP-1 U2 RVV: Rnwy 31 REIL: Rnwy 13
REMARKS: First 1500' rwy 22 not vis to tower.
TOWER 118.7 126.2 122.5R GND CON 121.9
APP CON 118.7 126.2 124.6 122.5R 116.5T 109.3T
ILS 109.3 I-SUX Apch Brng 307° LOM: 414/SU
(L) BVORTAC 116.5/SUX 312° 3.6 NM to fld.
RBn MHW 414/SU 307° 5.3 NM to fld.
VHF/DF available, contact Tower.
REMARKS: ¹LOM is MHW

*****NEBRASKA*****

ALLIANCE (L) BVOR 111.8/AIA FSS: SCOTTSBLUFF
RBn HW 287/AIA
BEATRICE (L) BVOR 110.6/BIE FSS: LINCOLN
INDEPENDENCE RBn MHW 400/IDP
JACKSON RBn MHW 233/JKN FSS: SIOUX CITY CS/T
MCCOOK (L) VOR 110.0/MCK
NORFOLK (L) BVOR 109.6/OFK FSS: OMAHA
NORTH PLATTE (L) BVORTAC 117.4/LBF FSS: NORTH PLATTE
RBn H-SAB 224/LBF

NEBRASKA-Continued

OMAHA
EPPLEY FIELD IFR 3 NE FSS: OMAHA on Fld 983 H85/14-32 (4) (S-180, T-200, TT-400) BL4, 6, 8A, 9, 11, 12 55 F4, JP1, 4 RVV: Rnwy 14 RVR: Rnwy 14
REIL: Rnwy 35
REMARKS: US Customs Indg rts arpt. Rnwys 8-26 and 2-20 restricted to acft 10,000 lbs or less.
TOWER 119.1 126.2 122.5R OMAHA GND CON 121.9
RADAR SERVICES: (BCN)
OMAHA APP CON 120.3 125.7 122.5R
OMAHA DEP CON 124.5 118.0
ILS¹ 110.3 I-OMA Apch Brg 135° LOM: 379/OM
OMAHA (H) BVORTAC 116.3/OMA 309° 10.2 nm to fld.
OMAHA RBn H-SAB 320Δ/OMA 139° 4.4 nm to fld.
REMARKS: BC unusable beyond 16 NM.

O'NEILL (H) BVORTAC 113.9/ONL FSS: GRAND ISLAND
OSHKOSH RBn (HW) 233/OKS
PAWNEE CITY (H) BVORTAC 112.4/PWE FSS: LINCOLN
RAYMOND (L) BVORTAC 116.0/RAY FSS: LINCOLN
SCOTTSBLUFF (H) BVORTAC 112.6/BFF FSS: SCOTTSBLUFF
RBn SBH 341/BFF
SYDNEY (H) BVOR 115.7/SNY
VALENTINE RBn H 314/VTN
REMARKS: Opr by State

*****SOUTH DAKOTA*****

ABERDEEN (H) BVOR 113.0/ABR FSS: ABERDEEN
Rng SBRAZ 329/AR
DU PREE (H) BVORTAC 116.8/DPR FSS: PIERRE
ELLSWORTH (L) BVOR 110.8/RCA FSS: RAPID CITY
MITCHELL (L) BVOR 109.2/MHE FSS: HURON
REMARKS: Rstd to VFR use only UFN
PHILIP (L) BVOR 108.4/PHP FSS: PIERRE
PIERRE (L) BVOR 112.5/PIR FSS: PIERRE
RBn SBH 347/PIR
RAPID CITY (H) BVORTAC 112.3/RAP FSS: RAPID CITY
RBn H-SAB 254Δ/RAP

SIOUX FALLS
JOE FOSS FIELD IFR 2 NW FSS: HURON (OL)
1428 H90/3-21 (3) (S-30, T-40, TT-) BL4, 6 55
F5, JP1 U2 RVV: Rnwys 3, 21 REIL Rnwy 15
REMARKS: Rnwy 9-27 restricted of acft over 30,000 lbs, rwy 3-21 & 15-33 rest to acft over 120,000 lbs. 1032' (2442' MSL) twr 8 nmi SE.
TOWER 118.3 122.5R GND CON 121.9
APP CON 125.8 122.5R 115.0T 109.9T 245T
ILS 109.9 I-FSD Apch Brg 026° LOM: 219/FS
SIOUX FALLS (H) BVORTAC 115.0/FSD 147° 4.1 NM to fld.
SIOUX FALLS RBn SBH 245/FSD 094° 1.9 NM to fld
WATERTOWN (L) BVORTAC 116.6/ATY FSS: WATERTOWN
YANKTON (L) BVOR 111.4/YKN FSS: HURON

EXCERPTED

AIM- FSS AND WEATHER BUREAU TELEPHONE NUMBERS

Flight Service Stations (FSS) provide information on airport conditions, radio aids and other facilities, and process flight plans. Stations providing Airport Advisory Service (AAS) are indicated by the letters AAS following the FSS name. 122.2T is the standard FSS transmitting frequency for this service.

In addition, they provide an aviation weather briefing service. Flight and weather briefing service is provided on the telephone numbers listed. The telephone area code number is shown in parentheses. Each number given is the preferred telephone number to obtain flight weather information. Automatic answering devices are sometimes used on listed lines to give general local weather information during peak workloads. To avoid getting the recorded general weather announcement, use the selected telephone number listed.

★ Indicates Pilot's Automatic Telephone Weather Answering Service (PATWAS) available, providing transcribed aviation weather information.

- Indicates a restricted number, use for aviation weather information
- Call FSS for "one call" FSS/WBAS briefing service.

Flight Service Stations are listed alphabetically, by state. The airport name, on which the FSS is located, is shown in parentheses when different from the FSS name

Standard Flight Service Station civil communications frequencies are: 128.7 122.2T 122.1R 123.6 and emergency 121.5. These frequencies are normally available at all stations listed.

IOWA

Burlington (AAS).....	FSS (319)	752-4734
Cedar Rapids.....	FSS (319)	364-3041
Davenport (via Moline Ill.).....	WB (319)	326-2677
Des Moines.....	FSS (515)	285-5691
	WB (515)	284-4493 ◆
Dubuque.....	WB (319)	582-3171
		(0545-2105)
Mason City (AAS).....	FSS (515)	GA 3-7512
Ottumwa.....	FSS (515)	MU 2-1846
Sioux City.....	FSS (712)	258-1060
	WB (712)	252-0244
		ext 210
Waterloo.....	FSS (319)	AD 3-5528
	WB (319)	234-9902

NEBRASKA

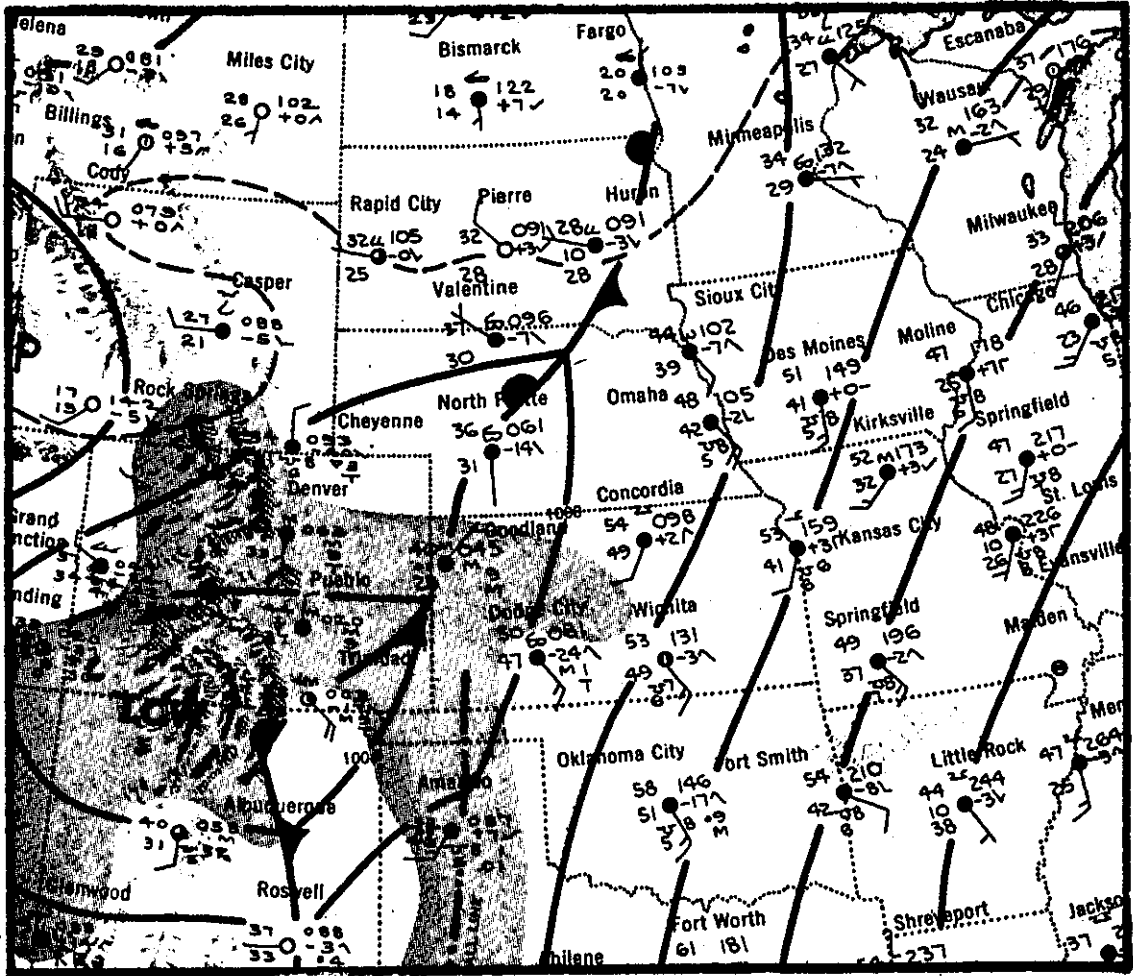
Location	Area Code	Telephone
Chadron (AAS).....	FSS (308)	HE 2-3153
Grand Island.....	FSS (308)	382-5196
	WB (308)	384-1907
Imperial (AAS).....	FSS (308)	TU 2-4887
Lincoln (Mun/AFB).....	FSS (402)	477-3929 ■
Norfolk.....	WB (402)	371-3386
		(0530-2130)
North Platte (AAS) (Lee Bird).....	FSS (308)	LE 2-4034 ■
Omaha (Eppley).....	FSS (402)	341-6178 ■
	WB (402)	342-3603 ★
Scottsbluff (AAS).....	FSS (308)	635-2615
	WB (308)	632-6822
Sidney.....	FSS (308)	254-3130
Valentine.....	WB (402)	376-3442

SOUTH DAKOTA

Aberdeen.....	FSS (605)	BA 5-5264
	WB (605)	225-7157 ◆
Huron (AAS) (W. W. Howes).....	FSS (605)	352-3806
	WB (605)	352-2495 ◆
		(0500-2100)
Pierre (AAS).....	FSS (605)	224-5894
Rapid City.....	FSS (605)	FI 2-2280
	WB (605)	342-1160
Sioux Falls.....	FSS (605)	ED 8-4841
	WB (605)	338-1441 ◆
Watertown (AAS).....	FSS (605)	TU 6-4581

TENNESSEE

Blountville.....	WB (615)	323-8242 ◆
Chattanooga.....	WB (615)	892-3747 ◆
Crossville (AAS) (Crossville-Cumberland).....	FSS (615)	484-6711
Dyersburg (AAS).....	FSS (901)	285-4842
		(0600-2200)
Jackson (AAS) (McKeller).....	FSS (901)	427-0611
Johnson City.....	WB (615)	323-8242
Kingsport.....	WB (615)	323-8242 ◆
Knoxville (McGhee-Tyson).....	FSS (615)	577-0795
	WB (615)	577-4805 ◆
		(from Maryville)
		(615) 982-3682
Maryville (See Knoxville)		
Memphis.....	FSS (901)	398-9260/9
	WB (901)	398-2347 ★
	WB (901)	398-2672 ◆
Nashville (Metropolitan).....	FSS (615)	254-6552/3
	WB (615)	255-8732 ★
	WB (615)	256-0333 ◆
Tri City (TRI).....	FSS (615)	323-7242
	WB (615)	323-8242 ◆



**SURFACE WEATHER MAP
AND STATION WEATHER
AT 1:00 A. M., E. S. T.**

<p>Wind speed. (21 to 25 miles per hour.)</p> <p>Direction of wind (From the north-west)</p> <p>Temperature in degrees Fahrenheit</p> <p>Total amount of clouds (Sky completely covered)</p> <p>Visibility (3/4 miles)</p> <p>Present weather (Continuous slight snow in flakes)</p> <p>Dewpoint in degrees Fahrenheit</p> <p>Cloud type. (Low fractostratus and/or fractocumulus)</p> <p>Height of cloud base (300 to 599 feet.)</p>	<p>SPECIMEN STATION MODEL</p> <p>Cloud type (High cirrus)</p> <p>31 247</p> <p>30 -6 -2</p> <p>21 45</p> <p>Part of sky covered by lowest cloud. (Seven or eight tenths)</p>	<p>Cloud type. (Middle alto cumulus)</p> <p>Barometric pressure at sea level. Initial 9 or 10 omitted. (1024.7 millibars)</p> <p>Amount of barometric change in past 3 hours. (In tenths of millibars)</p> <p>Barometric tendency in past 3 hours. (Rising)</p> <p>Sign showing whether pressure is higher or lower than 3 hours ago</p> <p>Time precipitation began or ended. (Began 3 to 4 hours ago)</p> <p>Weather in past 6 hours. (Rain)</p> <p>Amount of precipitation in last 6 hours.</p>
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Abridged from W. M. O. Code

**PLAIN LANGUAGE INTERPRETATION
OF THE
AREA FORECAST
FOR THE PERIOD 7 A. M. TO 7 P. M. , C. S. T.
FOR NEBRASKA (EXCEPT PANHANDLE),
IOWA, KANSAS, AND NORTHWESTERN MISSOURI**

CLOUDS AND WEATHER: The low pressure area which is centered in south central Colorado will move northeastward to north central Nebraska by the end of this period. A cold front will accompany the center of this low and extend from the vicinity of Omaha, Nebraska, to Chanute, Kansas, and thence southwestward. Isolated thunderstorms will form briefly in the forenoon from central Kansas to southern Iowa and then dissipate. More isolated thunderstorms will develop in the afternoon and evening in the central portions of Kansas and Nebraska. In the early forenoon, ceilings in central and western Kansas and western Nebraska will be generally overcast from 400 to 800 feet with the visibility in isolated areas as low as 1/2 to 2 miles due to fog and occasional light rain. There will be a gradual improvement in both ceilings and visibility so that by noon, ceilings should be generally broken from 2500 to 5000 feet, and the visibility should be greater than 6 miles except in precipitation. Ahead of the frontal system in Kansas and northwestern Missouri, and extending into central Iowa, the surface winds should be southerly, increasing from 10 to 15 knots in the forenoon to 20 knots with gusts to 30 knots in the late afternoon.

ICING: There will be locally moderate icing in clouds above the freezing level. The freezing level will be 10,000 to 12,000 feet.

TURBULENCE: The turbulence will be moderate in the afternoon in the vicinity of developing thunderstorms.

OUTLOOK: For the period from 7 P. M. today until 7 A. M. tomorrow, the low pressure area will continue to move northeastward at a speed of 20 to 35 knots, and will be beyond this district by the end of the period. Thunderstorms will be becoming more numerous near and ahead of the front in the eastern portions of Kansas and Nebraska, and in the western portions of Iowa and northwestern Missouri. Stratus clouds will form in western Nebraska and extreme northwestern Kansas during the last half of the period, causing light precipitation.

STATION DESIGNATORS

ANW AINSWORTH, NEBRASKA
DSM DES MOINES, IOWA
EAR KEARNEY, NEBRASKA
FSD SIOUX FALLS, SOUTH DAKOTA
GRI GRAND ISLAND, NEBRASKA
LBF NORTH PLATTE, NEBRASKA
OFK NORFOLK, NEBRASKA
OMA OMAHA, NEBRASKA
RWF REDWOOD FALLS, MINNESOTA
SUX SIOUX CITY, IOWA

TERMINAL FORECASTS

FT1 MKC 121115Z
1100 - 2300 TUE

FSD C706F. 07C 70C400. 09C O 1315.
LBF C805R-F 1825 OCNL TRW- AFTR 10C. 12C 50C600 1810.
14C C600 1910G20 OCNL TRW-.
OFK DO LBF.
GRI DO LBF.
OMA C1005R- 1820 OCNL C803R-F. 14C C120200 1820 OCNL TRW-
TIL 16C. 16C 600 1920G OCNL RW- C6003R-.

WINDS ALOFT FORECASTS

FD-2 WBC 121150Z
12-18Z TUE

LVL 3000 5000 FT 7000 10000FT 15000FT 20000FT 25000FT

DSM 0915 1020+12 1225 1430+08 1920+05 1835+01 1840-05
GRI 2030 2240+15 2245 2145+10 2255+02 2155+01 2155-02
RWF 2125 2235+09 2240 2240+05 2350+01 2355-05 2355-08

18-24ZTUE

DSM 1915 2025+20 2130 2225+12 2225+08 2325+02 2335-05
GRI 1825 1930+15 2005 2000+12 2105-05 2105-08 2210-01
RWF 1910 2020+20 2230 2225+12 2235+08 2335+02 2340-05

AVIATION WEATHER REPORTS

SA31121200

(0600C)

OFK E14015 094/56/53 1820G30/979/LE50
SUX M26035012R-- 100/56/54 1823G31/982 LB02
GRI S M16015 091/56/52 1619/979
EAR S M9010 061/53/51 1918/971
LBF M10010 034/51/48 1821G28/963
ANW M10010R- 031/45/43 1820/964
PHP O15+ 988/42/41 1829/953 FEW ST 7HD
FSD M26035012R- 100/56/49 1913G24/982 RB45

SA31121300

(0700C)

OFK M15015 091/57/53 1617/979
SUX M25035012R- 100/55/50 1825G30/980
GRI E16015 091/57/53 1617/979
EAR M708 061/54/53 1819/971 CIG RGD
LBF E10010 027/51/49 1821G30/961
ANW E12015 031/47/46 1820/963/RE10 BIN0VC
PHP S 7015+ 987/41/40 1615/951
FSD M22030012 100/55/50 1615G25/982 RE20

SA311221600

(1000C)

OFK E25015 015/62/52 1720/975 FEW CU N-E
SUX E35010 051/59/54 1820/967 RE05
GRI 200E40015 003/59/48 1715G20/954 FEW CU N-E
EAR E250/015 003/61/47 2018G25/955
LBF O15 963/61/33 1815G20/943
ANW O15 993/57/29 1915G20/954
PHP E30015+ 917/49/35 2220G25/932
FSD E40015+ 037/57/48 1818/963/RE40 0V0