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ABSTRACT

This guide is intended to assist persons preparing to take the written test for the private airplane pilot rating. Guidance is offered on what to expect on the FAA-administered test. Recommendations for study material are presented. Samples of test forms are included and 119 pages of sample questions are provided. (RE)

PRIVATE PILOT - AIRPLANE

Written Test Guide

REVISED 1979

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL AVIATION ADMINISTRATION

PRIVATE PILOT

AIRPLANE

WRITTEN TEST GUIDE

REVISED 1979

U.S. DEPARTMENT OF TRANSPORTATION
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PRIVATE PILOT - AIRPLANE

Written Test Guide

ERRATA SHEET

In printing the subject advisory circular, the charts on pages 84, 86, and 98 were inadvertently reduced 5 percent which makes the scale incorrect if using a plotter. However, the proper answers to test items adjacent to these charts may be obtained by using the reduced scale at the bottom of pages 84, 86, and 98.

Also, an inconsistency exists between the date on the spine and cover. Write "REVISED 1979" on the spine.

U.S. DEPARTMENT OF TRANSPORTATION
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PREFACE

This guide has been developed by the Federal Aviation Administration to assist applicants in preparing for the Private Pilot-Airplane Written Test. It supersedes AC 61-32B, Private Pilot-Airplane Written Test Guide, dated 1977.

This guide outlines the aeronautical knowledge requirements for a private pilot. It also contains a list of source material, includes instructions for taking the official written test, and contains the test items used in the development of the FAA Private Pilot-Airplane Written Tests.

The test items in this guide are based on regulations, principles, and practices that were current at the time this publication was printed. Test items in the FAA written tests are updated as the need arises, consequently they may vary from those contained herein.

The FAA does not supply the correct answers to questions included in the guide. We believe that students should determine these answers by research and study, by working with instructors, or by attending ground schools. The FAA is in no way responsible for the contents of commerical reprints of this publication nor the accuracy of answers they may list.

Comments regarding this publication should be directed to the U.S. Department of Transportation, Federal Aviation Administration, Flight Standards National Field Office, P.O. Box 25082, Oklahoma City, Oklahoma 73125.

PRIVATE PILOT-AIRPLANE WRITTEN TEST GUIDE

CONTENTS

PRIVATE PILOT-AIRPLANE WRITTEN TEST GUIDE

USE OF THIS GUIDE

This guide is offered to assist persons in obtaining the knowledge to pass the Private Pilot-Airplane Written Test. There is NO quick and easy way to obtain the experience, knowledge, and skill that is required of the present-day private pilot. There can be no substitute for diligent study to attain basic knowledge, develop competence, and to remain current in the many subject areas where technological change is the rule rather than the exception.

Effective pilot training is based on knowledge and understanding of principles, which enhance operational skills essential to safety in flight. The intent of this publication is to show the range of subjects and direct the applicant's study program to the aeronautical knowledge required of those applying for a Private Pilot Certificate.

The questions that are used to develop the FAA Private Pilot-Airplane Written Tests are included in this study guide. It must be emphasized, however, that learning to answer these items *solely by rote* will not ensure sufficient knowledge of the subjects, since tests of this type are only a sample of one's knowledge. To acquire complete understanding of the pertinent subjects, the applicant is strongly urged to follow the Study Outline provided herein and thoroughly study the material in referenced publications—then use the test items to review and evaluate understanding of all the subject matter areas.

NATURE OF THE WRITTEN TEST

Years ago in the early days of aviation the private pilot was concerned primarily with flights in the vicinity of the local airport. Today, however, the area of operation is virtually unlimited for the private pilot who participates in extended personal or business flights. Consequently, today's private pilot often encounters various conditions over unfamiliar terrain which require adequate knowledge of weather, air traffic rules, and principles of flight to safely cope with normally anticipated situations and to safely and efficiently proceed to the destination.

FAA written tests are developed to require the ability to use aeronautical knowledge in practical situations.

An applicant for a private pilot certificate is required to have received and logged ground instruction from an authorized ground or flight instructor, or present evidence showing satisfactory completion of a course of instruction or home study, in specific aeronautical subjects. Those subjects are outlined in this study guide. To ensure that adequate knowledge of those subjects has been acquired, applicants are required to pass the FAA Private Pilot-Airplane Written Test.

As a convenience to the prospective private pilot, portions of the Federal Aviation Regulations concerning general eligibility and aeronautical knowledge requirements for the private pilot certificate are included in this guide.

TYPE OF TEST QUESTIONS

All test questions in the Private Pilot Written Test are the objective, multiple-choice type, and can be answered by the selection of a single answer. This type of test conserves the applicant's time when taking the test, permits greater coverage of subject matter; reduces the time required for scoring, and eliminates subjective judgment in determining grades.

Each item is independent of other test items. That is, a correct answer to one test item does not depend upon, nor influence, the correct answer to another item.

TAKING THE WRITTEN TEST

The Private Pilot Airplane Written Test contains 60 test items and 4 hours are allowed for completing this test. The equipment needed for taking the test includes a protractor or plotter and a navigation type computer. The applicant may also use electronic or mechanical calculators subject to the following limitations: (a) prior to, and on completion of the test, the test monitor will instruct the applicant to actuate the "ON/OFF" switch, observing this action, to ensure erasure of any data stored in memory circuits; (b) tape printout of data must be surrendered to the test monitor if the calculator incorporates this design feature; and (c) the applicant is not permitted to use any material containing instructions related to operation of the calculator during the written test. Textbooks or notes are forbidden. The office administering the test will furnish paper and special pencils.

Communication between individuals through the use of written words is a complicated process. Consequently, considerable effort is expended to write each test item in a clear, precise manner. Applicants should carefully read the information and instructions given with the tests, as well as the test items.

Remember the following when taking the written test:

1. There are no "trick" questions. Each statement means exactly what it says. Do not look for hidden meanings. The statement does not concern exceptions to the rule, but refers to the general rule.

2. Carefully read the entire test item before selecting an answer. Skimming and hasty assumptions can lead to a completely erroneous approach to the problem because of failure to consider vital words. Examine and analyze the list of alternative responses, then select the one that answers the question or completes the statement correctly.

3. Only one of the answers given is completely correct. The others may be the result of using incorrect procedures to solve problems, common misconceptions, or insufficient knowledge of the subject. Consequently, many of the incorrect answers may appear to be correct to those persons whose knowledge is deficient. If the subject matter is adequately understood, the questions should not be difficult to answer correctly.

4. If considerable difficulty is experienced with a particular test item, do not spend too much time on it, but continue with other items which you consider to be less difficult. When all of the easier items are completed, go back and complete those items that were found to be more difficult. This procedure will enable you to use the available time to maximum advantage.

5. In solving problems which require computations or the use of a plotter and computer, select the answer which most nearly agrees with the calculated result. Due to slight differences in navigation computers and small errors that may exist in the measurement of distances, true courses, etc., it is possible that an exact agreement with available answers will not occur. Sufficient spread is provided between right and wrong answers, however, so that the selection of the answer which is more nearly that of the calculated result will be the correct choice, *provided* correct technique and reasonable care were used in making computations.

When the test was constructed, various types of navigation computers were used to solve the problems. The correct answer is an average of the results produced by these computers; therefore, any of the several types of computers authorized by the FAA for use on written tests should prove satisfactory.

Applicants may find that certain test questions involving regulations, ATC procedures, etc., are outdated by very recent changes. In these instances, applicants are *given credit* for the test item during the period that it takes to distribute a revised question.

To become familiar with the procedures and materials used for taking the FAA Private Pilot-Airplane Written Test, samples of the actual General Instructions, Written Test Application, Question Selection Sheet, and answer sheet are provided in this guide.

After completing the test, your answer sheet is forwarded to the Federal Aviation Administration, Aeronautical Center in Oklahoma City, for scoring by electronic computers (ADP). Shortly thereafter, you will receive an Airman Written Test Report which not

only includes the grade but also lists, in code, the subject areas in which test items were answered incorrectly. Those subject areas can be determined by reference to the Written Test Subject Matter Codes which accompanies the report. (See sample copy of the form that is included in this guide.) This method provides an essential feedback which can be effectively used for further study of the areas in which your knowledge was inadequate.

It must be emphasized here that the *total number* of subject codes shown on the test report does *not* necessarily indicate the total number of test items answered incorrectly. When one or more questions are missed in a given subject area, the code for that subject appears only once on the grade report.

The written tests are administered by FAA General Aviation District Offices (GADO), Flight Standards District Offices (FSDO), Air Carrier District Offices (ACDO), and Flight Service Stations (FSS). Since certain FAA field offices do not administer written tests, it is advisable to determine that the field office where you plan to take the test can provide this service.

When reporting for the written test, be prepared to present to the person administering the test proof of your eligibility to take the test, as well as documentary evidence of your identity. Additionally, you should plan your arrival to allow sufficient time to complete the test.

RETESTING AFTER FAILURE

An applicant who fails the written test may not apply for retesting until 30 days after the date the applicant failed the test. However, in the case of the *first* failure, the person may apply for retesting before the 30 days have expired upon presenting a written statement from an authorized instructor certifying that appropriate ground instruction was given to the applicant, and the instructor finds that person competent to pass the test. In addition, the written test report of the previously failed test must be presented at the time of retesting.

RECOMMENDED STUDY MATERIALS

The prospective private pilot will find the following publications, most of which were developed by the U.S. Department of Transportation, useful in preparation for the written test. The following lists recommended reference materials but does not include all the useful material that is available. Many excellent textbooks, audio-visual training aids, and instructional materials produced commercially may be obtained from various bookstores and fixed base operators engaged in flight training.

List of Publications

ADVISORY CIRCULARS. The FAA issues Advisory Circulars to inform the aviation public in a systematic way of nonregulatory material of interest. Many of the study materials in this guide are issued as Advisory Circulars. Before ordering any FAA publication, it is advisable to obtain a copy of:

AC 00-2 (latest revision) Advisory Circular Checklist.

AC 00-2 includes the most current prices on the FAA publications which are cost items, information regarding their availability, and instructions for ordering them from the Superintendent of Documents. All free advisory circulars are also listed in the Advisory Circular Checklist. To obtain a free copy of AC 00-2, send the request to:

U.S. Department of Transportation
Publications Section M-443.1
Washington, D.C. 20590

PILOT'S HANDBOOK OF AERONAUTICAL KNOWLEDGE. AC 61-23A. Stock No. 050-011-00051-8. Contains authoritative information used in training pilots, and most subject areas in which an applicant may be tested. This publication is in the process of being revised.

PLANE SENSE. AC 20-5D. Acquaints the prospective airplane owner with certain fundamentals of owning and operating an airplane. It is free upon request.

FLIGHT TRAINING HANDBOOK. AC 61-21. Stock No. 050-007-00008-1. This text deals with certain basic flight information such as load factor principles, weight and balance, and related aerodynamic aspects of flight, as well as principles of safe flight. Thus it serves as a text for student pilots, for pilots improving their qualifications, or preparing for additional ratings.

AVIATION WEATHER. AC 00-6A. Stock No. 050-007-00283-1. Contains information on weather phenomena for pilots and other flight operations personnel whose interest in meteorology is primarily in its application to flying.

AVIATION WEATHER SERVICES. AC 00-45A. Stock No. 050-007-00392-7. Supplements AC 00-6A, Aviation Weather, in that it explains the weather service in general and the use and interpretation of reports, forecasts, weather maps, and prognostic charts in detail. It is an excellent source of study for pilot certification examinations.

PILOT'S WEIGHT AND BALANCE HANDBOOK. AC 91-23A. Stock No. 050-007-00405-2. Provides an easily understood text on aircraft weight and balance. It progresses from an explanation of fundamentals to the application of weight and balance principles in aircraft operations.

WAKE TURBULENCE. AC 90-23D. Presents information on the subject of wake turbulence and suggests techniques that may help pilots avoid the hazards of wingtip vortex turbulence. It is free upon request.

MEDICAL HANDBOOK FOR PILOTS. AC 67-2. Stock No. 050-007-00254-8. An aviation medicine handbook written in pilots' language that provides guidance on when, and when not, to fly. Emphasizes the fact that a good pilot must be physically fit, psychologically sound, and well trained.

FEDERAL AVIATION REGULATIONS (FARs). The FAA publishes the Federal Aviation Regulations to make readily available to the aviation community the regulatory requirements placed upon them. These regulations are sold as individual Parts by the Superintendent of Documents. The more frequently amended Parts are sold on subscription service (that is, subscribers will receive changes automatically as issued), while the less active Parts are sold on a single-sale basis. Changes to single-sale Parts will be sold separately as issued. Information concerning these changes will be furnished by FAA through its "Status of Federal Aviation Regulations, AC 00-44 (latest revision)." The status list is free upon request.

Check or money order made payable to the Superintendent of Documents should be included with each order. Submit orders for single-sales and subscription Parts on different order forms. No COD orders are accepted. All FAR Parts should be ordered from: Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

The suggested Parts for study are:

Part 1, Definitions and Abbreviations.

Part 61, Certification: Pilots and Flight Instructors.

Part 71, Designation of Federal Airways, Controlled Airspace, and Reporting Points.

Part 91, General Operating and Flight Rules.

NATIONAL TRANSPORTATION SAFETY BOARD, Part 830. This publication deals with procedures required in the notification and reporting of accidents and lost or overdue aircraft within the United States, its territories, and possessions. It is free upon request from the National Transportation Safety Board, Publications Branch, Washington, D.C. 20594.

FLIGHT INFORMATION/OPERATIONAL PUBLICATIONS

AIRMAN'S INFORMATION MANUAL (AIM)

This manual is designed to provide airmen with basic flight information and ATC procedures for use in the National Airspace System (NAS) of the U.S. It also contains items of interest to pilots concerning health and medical facts, factors affecting flight safety, a pilot/controller glossary of terms used in the Air Traffic Control System, and information on safety, accident and hazard reporting.

This manual is complemented by other operational publications which are available upon separate subscription. These publications are:

GRAPHIC NOTICES AND SUPPLEMENTAL DATA—A publication containing a tabulation of Parachute Jump Areas; Special Notice—Area Graphics; Terminal Area Graphics; Terminal Radar Service Area (TRSA) Graphics; Olive Branch Routes; and other data, as required, not subject to frequent change. This publication is issued quarterly.

NOTICES TO AIRMEN (CLASS II)—A publication containing current Notices to Airmen (NOTAMs) which are considered essential to the safety of flight as well as supplemental data affecting the other operational publications listed here. This publication is issued every 14 days.

AIRPORT/FACILITY DIRECTORY, ALASKA SUPPLEMENT, PACIFIC SUPPLEMENT—These publications contain information on airports, communications, navigational aids, instrument landing systems, VOR receiver checkpoints, FSS/Weather

Service telephone numbers, and various other pertinent special notices. These publications are available upon subscription from the National Ocean Survey (NOS), Distribution Division (C-44), Riverdale, Maryland 20840.

VFR IFR EXAM O-GRAMS. Brief, timely, and graphic articles developed and published on a continuing basis. They are nondirective in nature and are issued as an information service, particularly to individuals interested in FAA Airman Written Tests. They relate to concepts, practices, and procedures critical to aviation safety, common misconceptions among pilot applicants, and areas which cause difficulty in written tests. Exam O-Grams are available free of charge but are limited to a single copy per request. Requests for placement on the mailing list should be addressed to:

U.S. Department of Transportation
Flight Standards National Field Office
Examinations Stds. Branch, AFS 590
P.O. Box 25082
Oklahoma City, Oklahoma 73125

AERONAUTICAL CHARTS. Private pilot written tests contain test items relating to the use of Sectional Aeronautical Charts and the information contained in the legend of these charts.

The National Ocean Survey publishes and distributes aeronautical charts of the United States. Charts for foreign areas are published by the U.S. Air Force Aeronautical Chart and Information Center (ACIC) and are sold by the National Ocean Survey.

A "Catalog of Aeronautical Charts and Related Publications" listing their prices and instructions for ordering may be obtained free, on request, from:

National Ocean Survey
Distribution Division, (C-44)
Riverdale, Maryland 20840

Orders for specific charts or publications should be accompanied by check or money order made payable to "NOS, Department of Commerce."

AIRPLANE FLIGHT MANUALS AND PILOTS OPERATING HANDBOOKS. Aircraft manufacturers issue manuals for each aircraft model. They may be obtained from aircraft manufacturing companies or possibly from local airplane dealers and distributors. Applicants should find these manuals helpful in their study program for becoming familiar with aircraft performance charts.

PRACTICAL AIR NAVIGATION. Provides a comprehensive coverage of subjects and areas dealing with navigation whether it be pilotage, dead reckoning, or radio and celestial navigation. Students who understand the material in this textbook will have no trouble with the navigation problems. This textbook may be obtained from many book dealers or from the publisher; Jeppesen & Co., 8025 East 40th Ave., Denver, Colorado 80209.

HOW TO OBTAIN PUBLICATIONS SOLD BY SUPERINTENDENT OF DOCUMENTS

1. Use an order form, not a letter unless absolutely necessary, when ordering Government publications. Order forms may be obtained *free* upon request from:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

2. Send separate orders for subscription and nonsubscription items.

3. Give the exact name, Advisory Circular identification number and GPO stock number when ordering publications.

4. Send a check or money order for the *exact* amount made out to Superintendent of Documents. DO NOT SEND CURRENCY. (Include an additional 25% of the order price to cover postage for foreign mailing.)

5. If a letter is used to request publications, enclose a self-addressed mailing label.

6. Use special delivery when needed.

7. All prices are subject to change. The latest Advisory Circular Checklist, AC 00-2, should be consulted for current prices of publications. It is important that the *correct* amount be enclosed with the order.

Subpart A—General

§ 61.33 Tests: general procedure.

Tests prescribed by or under this Part are given at times and places, and by persons, designated by the Administrator.

§ 61.35 Written test: prerequisites and passing grades.

(a) An applicant for a written test must—

(1) Show that he has satisfactorily completed the ground instruction or home study course required by this Part for the certificate or rating sought;

(2) Present as personal identification an airman certificate, driver's license, or other official document; and

(3) Present a birth certificate or other official document showing that he meets the age requirement prescribed in this Part for the certificate sought not later than 2 years from the date of application for the test.

(b) The minimum passing grade is specified by the Administrator on each written test sheet or booklet furnished to the applicant.

Subpart D—Private Pilots

§ 61.101 Applicability.

This subpart prescribes the requirements for the issuance of private pilot certificates and ratings, the conditions under which those certificates and ratings are necessary, and the general operating rules for the holders of those certificates and ratings.

§ 61.103 Eligibility requirements: general.

To be eligible for a private pilot certificate, a person must—

(a) Be at least 17 years of age, except that a private pilot certificate with a free balloon or a glider rating only may be issued to a qualified applicant who is at least 16 years of age;

(b) Be able to read, speak, and understand the English language, or have such operating limitations placed on his pilot certificate as are necessary for the safe operation of aircraft, to be removed when he shows that he can read, speak, and understand the English language;

(c) Hold at least a current third-class medical certificate issued under Part 67 of this chapter, or, in the case of a glider or free balloon rating, certify that he has no known medical defect that makes him unable to pilot a glider or free balloon, as appropriate;

(d) Pass a written test on the subject areas on which instruction or home study is required by § 61.105;

(e) Pass an oral and flight test on procedures and maneuvers selected by an FAA inspector or examiner to determine the applicant's competency in the flight operations on which instruction is required by the flight proficiency provisions of § 61.107; and

(f) Comply with the sections of this Part that apply to the rating he seeks.

§ 61.105 Aeronautical knowledge.

An applicant for a private pilot certificate must have logged ground instruction from an authorized instructor, or must present evidence showing that he has satisfactorily completed a course of instruction or home study in at least the following areas of aeronautical knowledge appropriate to the category of aircraft for which a rating is sought.

(a) *Airplanes.*

(1) The Federal Aviation Regulations applicable to private pilot privileges, limitations, and flight operations, accident reporting requirements of the National Transportation Safety Board, and the use of the "Airman's Information Manual" and the FAA Advisory Circulars;

(2) VFR navigation, using pilotage, dead reckoning, and radio aids;

(3) The recognition of critical weather situations from the ground and in flight and the procurement and use of aeronautical weather reports and forecasts; and

(4) The safe and efficient operation of airplanes, including high density airport operations, collision avoidance precautions, and radio communication procedures.

§ 61.37 Written tests: cheating or other unauthorized conduct.

(a) Except as authorized by the Administrator, no person may—

(1) Copy, or intentionally remove, a written test under this Part;

(2) Give to another, or receive from another, any part of copy of that test;

(3) Give help on that test to, or receive help on that test from, any person during the period that test is being given;

(4) Take any part of that test in behalf of another person;

(5) Use any material or aid during the period that test is being given; or

(6) Intentionally cause, assist, or participate in any act prohibited by this paragraph.

(b) No person whom the Administrator finds to have committed an act prohibited by paragraph (a) of this section is eligible for any airman or ground instructor certificate or rating, or to take any test therefor, under this chapter for a period of one year after the date of that act. In addition, the commission of that act is a basis for suspending or revoking any airman or ground instructor certificate or rating held by that person.

§ 61.39 Prerequisites for flight tests.

(a) To be eligible for a flight test for a certificate, or an aircraft or instrument rating issued under this Part, the applicant must—

(1) Have passed any required written test since the beginning of the 24th month before the month in which he takes the flight test;

(2) Have the applicable instruction and aeronautical experience prescribed in this Part;

(3) Hold a current medical certificate appropriate to the certificate he seeks or, in the case of a rating to be added to his pilot certificate, at least a third-class medical certificate issued since the beginning of the 24th month before the month in which he takes the flight test;

(4) Except for a flight test for an airline transport pilot certificate, meet the age requirement for the issuance of the certificate or rating he seeks; and

(5) Have a written statement from an appropriately certificated flight instructor certifying that he has given the applicant flight instruction in preparation for the flight test within 60 days preceding the date of application, and finds him competent to pass the test and to have satisfactory knowledge of the subject areas in which he is shown to be deficient by his FAA airman written test report. However, an applicant need not have this written statement if he—

(i) Holds a foreign pilot license issued by a contracting State to the Convention on International Civil Aviation that authorizes at least the pilot privileges of the airman certificate sought by him;

(ii) Is applying for a type rating only, or a class rating with an associated type rating; or

§ 61.49 Retesting after failure.

An applicant for a written or flight test who fails that test may not apply for retesting until after 30 days after the date he failed the test. However, in the case of his first failure he may apply for retesting before the 30 days have expired upon presenting a written statement from an authorized instructor certifying that he has given flight or ground instruction as appropriate to the applicant and finds him competent to pass the test.

STUDY OUTLINE

PRIVATE PILOT-AIRPLANE KNOWLEDGE AREAS

This outline contains the basic aeronautical knowledge that the private pilot applicant is required to know. Questions in the FAA written test can be related to one or more of the topics in the outline. This subject matter is based on realistic operational airman activity and meets the requirements specified in the Federal Aviation Regulations.

I. FEDERAL AVIATION REGULATIONS

A. 14 CFR Parts 1 and 71: Definitions and Abbreviations; Controlled Airspace.

1. Airport traffic area
2. Ceiling
3. Flight time
4. Flight visibility
5. Pilot in command
6. Federal airway
7. Controlled area
8. Continental control area
9. Control zone
10. Terminal control area
11. Positive control area

B. 14 CFR Part 61: Certification: Pilots and Flight Instructors.

1. Required certificate/rating
2. Carriage of narcotic drugs/marihuana
3. Duration of pilot certificates
4. Duration of medical certificates
5. General limitations
6. Pilot logbooks
7. Operations during medical deficiency
8. Recent experience: pilot in command
9. Falsification, reproduction, alteration of certificates, records, etc.
10. Change of address
11. Private pilot privileges/limitations

C. 14 CFR Part 91: General Operating and Flight Rules--General (Subpart A).

1. Responsibility of pilot in command
2. Preflight action
3. Careless or reckless operation
4. Liquor and drugs
5. Dropping objects
6. Fastening of safety belts
7. Parachutes and parachuting
8. Portable electronic devices
9. ATC transponder equipment requirements
10. Civil aircraft: certificates required
11. Aircraft airworthiness
12. Aircraft operating limitations/markings
13. Supplemental oxygen
14. Instrument and equipment requirements
15. Limited/restricted aircraft limitations
16. Emergency locator transmitters (ELT)

D. 14 CFR Part 91: General Flight Rules (Subpart B).

1. Waivers
2. Operating near other aircraft
3. Right-of-way rules
4. Aircraft speed restrictions
5. Acrobatic flight
6. Aircraft lights
7. Complying—ATC clearances/instructions
8. ATC light signals
9. Minimum safe altitudes: general
10. Altimeter settings
11. Flight plan; information required
12. Operating—in vicinity of airport
13. Operation—airport with control tower
14. Operation—airport without control tower
15. Flight in terminal control areas (TCA)
16. Temporary flight restrictions
17. Flight test areas
18. Restricted and prohibited areas

19. Positive control areas; route segments
20. Operations to, or over, Cuba
21. Basic VFR weather minimums
22. Special VFR weather minimums
23. VFR cruising altitude or flight level

E. Part 91: Maintenance, Preventative Maintenance, and Alterations.
1. General maintenance and alterations
2. Maintenance required
3. Carrying persons after repair/alteration
4. Inspections/progressive inspections
5. Altimeter system tests/inspections
6. Maintenance records/transfer of records
7. Rebuilt engine maintenance records
8. ATC transponder tests/inspections

II. NATIONAL TRANSPORTATION SAFETY BOARD--49 CFR PART 830

A. General.
1. Applicability
2. Definitions

B. Initial Notification of Aircraft Accidents, Incidents, and Overdue Aircraft
1. Immediate notification
2. Information to be given in notification

C. Preservation of Aircraft Wreckage, Mail, Cargo, and Records.

D. Reporting of Aircraft Accidents, Incidents, and Overdue Aircraft.

III. FAA ADVISORY CIRCULARS

A. Series 00—General.

B. Series 20—Aircraft.

C. Series 60—Airmen.

D. Series 70—Airspace.

E. Series 90—Air Traffic Control and General Operations.

IV. FLIGHT INFORMATION/OPERATIONAL PUBLICATIONS

A. AIM—Basic Flight Information and ATC Procedures.
1. Pilot controller glossary
2. Airport lighting/marking/aids
3. Air navigation radio aids
4. VOR (VHF omnidirectional range)
5. VOR receiver check
6. VHF direction finder
7. Radar
8. Visual approach slope indicator (VASI)
9. Rotating beacons
10. Runway markings
11. Controlled/uncontrolled airspace
12. Operating at nontower airports
13. Special use airspace prohibited, restricted, alert areas, military operations areas
14. Services available to pilots
15. Aeronautical advisory stations (UNICOM, MULTICOM)
16. Automatic terminal information service (ATIS)
17. ATC departure/en route/arrival procedures
18. Radar traffic information service
19. Transponder operation
20. Terminal control area
21. Terminal radar program for VFR aircraft
22. Airport operations/tower controlled airports/nontower airports
23. Radiotelephone phraseology/technique
24. Light signals
25. Traffic/wind direction indicators/taxiing
26. Weather information/briefing
27. VFR flight plans
28. En route flight advisory service
29. Transcribed weather broadcasts
30. Scheduled weather broadcasts
31. In-flight weather advisories/PIREPS
32. Clear air turbulence
33. Thunderstorms
34. Airframe icing
35. Altimetry
36. Pilots automatic telephone weather answering service (PATWAS)
37. ADIZ and designated mountainous areas
38. Wake turbulence
39. Pilot/controller roles/responsibilities
40. Medical facts for pilots
41. Fatigue
42. Hypoxia
43. Hyperventilation
44. Alcohol
45. Carbon monoxide
46. Good operating practices
47. Safety, accident, and hazard reports
48. Emergency procedures

B. Graphic Notices and Supplemental Data
   1. Parachute jumping areas
   2. Military training routes
   3. Special operations-olive branch routes
   4. Terminal area graphic notices
   5. Terminal radar service areas (TRSAs)

C. Notices to Airmen (NOTAMS)
   1. Specials

D. Airport/Facility Directory
   1. Airport/heliport data/seaplane bases
   2. VOR receiver checkpoints
   3. FSS-CS/T and national weather service telephone numbers
   4. Aeronautical chart bulletin
   5. Special notices

V. AVIATION WEATHER

A. The Earth's Atmosphere.
   1. Composition
   2. Vertical structure
   3. The standard atmosphere
   4. Density and hypoxia

B. Temperature.
   1. Temperature measurement
   2. Heat and temperature
   3. Temperature aloft
   4. Temperature variation

C. Atmospheric Pressure and Altimetry.
   1. Atmospheric pressure measurements
   2. Sea level pressure
   3. Station pressure
   4. Pressure variations
   5. Pressure systems
   6. Altimeters and altimeter setting
   7. Effect of temperature

D. Wind.
   1. Basic theory of general circulation
   2. Convection
   3. Pressure gradient force
   4. Coriolis force
   5. Friction and mountain effects
   6. The jet stream
   7. Local and small scale winds
   8. Large wind system
   9. Wind, pressure systems, and weather
   10. Wind shear

E. Moisture.
   1. Measurements
      a. Relative humidity
      b. Dewpoint
   2. Change of state
   3. Cloud formation precipitation
   4. Condensation and sublimation products

F. Stability and Instability.
   1. Adiabatic process
   2. Lapse rates
   3. Stability determinations
   4. Effects of stability or instability

G. Clouds.
   1. Composition
   2. Formation and structure
   3. Types
   4. Recognition/signposts

H. Air Masses
   1. Source regions
   2. Classification of air masses
   3. Air mass modification
   4. Summer and winter air mass weather

I. Fronts.
   1. Structures
   2. Types
   3. Frontal waves and occlusions
   4. Frontolysis and frontogenesis
   5. Associated weather

J. Turbulence.
   1. Convective currents
   2. Obstructions to wind flow
   3. Wind shear
   4. Clear air turbulence
   5. Categories of turbulence intensities
   6. Wake turbulence

K. Icing.
   1. Ice-producing cloud types
   2. Structural ice formation
   3. Frost and ground icing
   4. Types and intensities of in-flight structural icing
   5. Accretion rate of in-flight structural icing
   6. Effects of in-flight structural icing
   7. Structural aircraft icing and frost on the ground
   8. Structural anti-icing and deicing
   9. Instrument and powerplant icing
   10. Fuel and oil anti-icing

L. Thunderstorms.
1. Conditions necessary for formation
2. Structure
3. Classification
4. Hazards
5. Information from radar
6. Tornadoes
7. Do's and don'ts of thunderstorm flying

M. Obstructions to Vision.
1. Fog
2. Low stratus clouds
3. Haze and smoke
4. Blowing obstructions to vision
5. Precipitation
6. Obscured or partially obscured sky

N. The Nation's Aviation Weather Reporting System.
1. Observations
2. Meteorological centers and forecast office
3. Service outlets
4. Users

O. Weather Observations.
1. Surface weather observations
2. Pilot weather reports (PIREPS)
3. Weather radar observations
4. Upper air observations

P. Weather Charts.
1. Weather depiction charts
2. Surface weather charts
3. Constant pressure charts
4. Winds aloft charts
5. Radar summary charts
6. Prognostic surface and prognostic constant pressure charts
7. Prognostic significant weather charts
8. Density altitude charts

Q. Aviation Weather Forecasts.
1. Terminal forecasts (FT)
2. Area forecasts (FA)
3. Winds & temperatures aloft forecasts (FD)
4. TWEB route forecasts and synopses
5. In-flight weather advisories (WA, WS, WST)
6. Severe weather outlooks
7. Severe weather forecasts
8. Surface analyses and prognoses

R. Services to Pilots.
1. FSS briefing
2. Automatic terminal information service (ATIS)
3. Pilot's automatic telephone weather answering service (PATWAS)
4. Transcribed weather broadcasts (TWEB)
5. En route flight advisory service
6. Scheduled weather broadcasts

S. Determining Cloud Height From Reports.

T. Information in a Weather Briefing.

VI. AIRPLANE OPERATION

A. General.
1. Preflight/postflight safety practices
2. Flight controls
3. Wings and empennage
4. Fuel system principles
5. Fuel contamination prevention/elimination
6. Airplane hydraulic systems—airplane electrical systems
7. Wake turbulence causes/precautions
8. Crosswind takeoff landing practices
9. Proper loading of the aircraft
10. Recovery from critical flight situations
11. Aircraft operating limitations
12. High-altitude operations/pressurization
13. Use of supplemental oxygen and oxygen equipment
14. Midair collision avoidance precautions
15. Normal/crosswind takeoff and landing practices
16. Maximum performance takeoff/landing
17. Emergency landings
18. Design maneuvering speed
19. Taxiing during strong surface winds
20. Flap operation

B. Performance.
1. Takeoff charts
2. Rate-of-climb charts
3. Cruise charts
4. Maximum safe crosswind charts
5. Landing charts
6. Stall speed charts
7. Airspeed correction charts

8. Computing density/pressure altitudes
9. Effect of density altitude on performance
10. Critical performance speeds "V" speeds
11. Effect of wind and shear on aircraft performance
12. Bank/speed versus rate/radius of turns
13. Stall speed versus altitude or attitude
14. Stall speed versus indicated/true airspeed
15. Obstacle clearance takeoff/landing
16. Best angle-/rate-of-climb
17. Computations of gross weight/useful load
18. Computation of center of gravity

VII. ENGINE OPERATION

A. General.
1. Reciprocating engine principles
2. Carburetion principles
3. Carburetor/fuel injection principles
4. Carburetor heat effect on mixture
5. Lubrication systems
6. Electrical systems/units
7. Ignition systems/units
8. Fuel systems
9. Propeller principles
10. Manifold pressure versus RPM
11. Engine instruments
12. Effect of density altitude

B. Operation.
1. Engine starting/shutdown procedures
2. Detonation/preignition causes and effects
3. Carburetor icing and effect of heat
4. Engine operating limitations
5. Use of throttle, propeller, mixture controls
6. Interpreting engine instruments
7. Use of proper fuel

VIII. NAVIGATION

A. General.
1. Sectional chart interpretation
   a. Topographic information
   b. Symbols/obstruction heights/elevations
   c. Relief
   d. Aeronautical data
   e. Navigation aids
   f. Controlled airspace and special use airspace markings
2. Time zones and 24 hour system

B. Pilotage.
1. Plotting course
2. Identifying landmarks

C. Dead Reckoning.
1. Measuring courses
2. Measuring distances
3. Effect of wind on navigation
4. Magnetic variation and deviation
5. True airspeed and groundspeed
6. True course, magnetic course
7. Wind direction

D. Wind Triangles/Navigation Computer Principles.
1. True course and groundspeed
2. True heading and groundspeed
3. Magnetic heading and groundspeed
4. True course and true airspeed
5. Wind direction and speed
6. Time, speed, distance
7. Fuel consumption
8. Conversions-temperatures, speeds, distances, altitudes
9. Climbs and descents
10. Density altitude

E. Radio Navigation.
1. Characteristics of VOR facilities
2. Tuning VOR receivers
3. Identifying VOR stations
4. VOR interpretation/orientation
5. Intercepting VOR radials
6. Tracking VOR radials
7. Groundspeed checks using VOR radials
8. VOR frequency interference
9. VOR test signals/VOR receiver checks
10. Characteristics of ADF facilities
11. Tuning ADF receivers
12. Identifying stations used for ADF
13. ADF interpretation/orientation
14. Intercepting ADF bearings
15. Tracking ADF bearings or "homing"
16. Nondirectional radiobeacons
17. Distance measuring equipment
18. Transponder use
19. Emergency locator beacons (ELT)
20. Direction finding (DF)

IX. AERODYNAMICS AND PRINCIPLES OF FLIGHT

A. Laws of Motion.
   1. Bernoulli
   2. Newton

B. Functions of the Flight Controls.

C. Principles of Airfoils.
   1. Pressures above and below
   2. Relative wind and angle of attack
   3. Downwash
   4. Wingtip vortices

D. Wing Planform.
   1. Area/span/chord
   2. Aspect ratio/taper/sweepback
   3. Effect of planform on stall patterns

E. Forces Acting on an Airplane.
   1. Lift
   2. Drag-induced/parasite
   3. Thrust
   4. Weight
   5. Centrifugal/centripetal

F. Flight Controls/Axes of an Airplane.

G. Lift/Drag During Turns.
   1. Angle of attack
   2. Adverse yaw/aileron drag

H. Lift Versus Angle of Attack.

I. Lift/Thrust Versus Air Density.

J. Types/Effect of Flaps, Spoilers.

K. Effect of Flaps on Lift/Drag/Trim.

L. Effect of Ice/Snow/Frost on Airfoils.

M. Power Versus Climb/Descent/Level Flight.

N. Gyroscopic Principles/Torque Effect.

O. Types and Effects of Drag—Induced/Parasite/Profile.

P. Ground Effect.

Q. Principles of Propellers.

R. Stalls/Spins.

S. Loads/Load Factors.

T. Stability -Static and Dynamic/Longitudinal/Lateral/Directional.

X. FLIGHT INSTRUMENTS AND SYSTEMS

A. Attitude Indicator.

B. Heading Indicator.

C. Turn Indicator/Coordinator.

D. Altimeter Operation/Errors.

E. Vertical Speed Indicator.

F. Airspeed Indicator Operation/Errors.

G. Vacuum Systems/Instruments.

H. Pitot-Static Systems/Instruments.

I. Magnetic Compass Operation/Errors.

J. Altimeter Setting Procedure/Significance.

K. Pressure Altitude Significance/Computation.

XI. RADIO COMMUNICATIONS

A. VHF Radio Communications/Phraseology.

B. Position Reporting Procedures.

C. Tower/FSS/En Route Advisories/Instructions.

D. FSS Communications Procedures.

E. Obtaining Emergency Assistance.

F. Lost Procedure When Radio is Inoperative.

G. Use of Proper Communication Frequencies.

AIRMAN WRITTEN TEST APPLICATION

PRIVACY ACT STATEMENT

The information on this form is required under the authority of the Federal Aviation Act (Section 602). Certification cannot be completed unless the data is complete.

Disclosure of your Social Security Account Number (SSAN) is optional. If you do not supply your SSAN, a substitute number or identifier will be assigned to give your record a unique 9-digit number for internal control of airman records.

If your SSAN has been previously given, it is already in the system. Requests for removal must be in writing. If you do not wish your SSAN on future records, please do not disclose SSAN on airman written test, airman certification, and/or medical certification applications.

Routine uses of records maintained in the system, including categories of users and the purposes of such uses: To determine that airmen are certified in accordance with the provision of the Federal Aviation Act of 1958. Repository of documents used by individual and potential employers to determine validity of airmen qualifications. To support investigative efforts of investigation and law enforcement agencies of Federal, State, and local Governments. Supportative information in court case concerning individual status and/or qualifications in law suits. To provide data for the Comprehensive Airman Information System (CAIS). To provide documents for microfilm and microfiche backup records.

Sample

INSTRUCTIONS TO APPLICANT:

- ATTENTION: READ THE FOLLOWING PARAGRAPH CAREFULLY BEFORE COMPLETING THIS APPLICATION:

  WHOEVER, IN ANY MATTER WITHIN THE JURISDICTION OF ANY DEPARTMENT OR AGENCY OF THE UNITED STATES KNOWINGLY AND WILLFULLY FALSIFIES, CONCEALS OR COVERS UP BY ANY TRICK, SCHEME, OR DEVICE A MATERIAL FACT, OR MAKES ANY FALSE, FICTITIOUS OR FRAUDULENT STATEMENTS OR REPRESENTATIONS, OR MAKES OR USES ANY FALSE WRITING OR DOCUMENT KNOWING THE SAME TO CONTAIN ANY FALSE, FICTITIOUS OR FRAUDULENT STATEMENT OR ENTRY, SHALL BE FINED NOT MORE THAN $10,000 OR IMPRISONED NOT MORE THAN 5 YEARS, OR BOTH (U.S. CODE, TITLE 18, SEC. 1001.)

- CERTAIN TEST QUESTIONS INVOLVING REGULATIONS, ATC PROCEDURES, ETC., ARE FREQUENTLY OUTDATED BY VERY RECENT CHANGES. IN THESE INSTANCES, APPLICANTS ARE GIVEN CREDIT FOR THE QUESTION DURING THE PERIOD THAT IT TAKES TO DISTRIBUTE A REVISED QUESTION.

- DO NOT TEAR SHEETS APART.

- TURN TO PAGE 4 AND COMPLETE THE PERSONAL DATA SECTION. BE SURE THAT YOUR SIGNATURE IS ON THE PROPER LINE. BEFORE COMMENCING TEST, READ INSTRUCTIONS FOR MARKING THE ANSWER SHEET.

INSTRUCTIONS TO FAA PERSONNEL:

- REFER TO PAGE 3 OF THE APPLICATION FOR COMPLETION OF THE TIME WAIVER AND SECTION WAIVER BLOCK WHEN REQUIRED.

DEPARTMENT OF TRANSPORTATION — FEDERAL AVIATION ADMINISTRATION

AIRMAN WRITTEN TEST APPLICATION

DATE OF TEST (MONTH / DAY / YEAR): 02 / 15 / 79

TITLE OF TEST: PRIVATE PILOT AIRPLANE

TEST NO: 218232

PLEASE PRINT ONE LETTER IN EACH SPACE. LEAVE A BLANK SPACE AFTER EACH NAME.

NAME (LAST, FIRST, MIDDLE): Doe John R.

DATE OF BIRTH (MONTH / DAY / YEAR): 03 / 16 / 53

MAILING ADDRESS (NO. AND STREET, APT. #, P.O. BOX OR RURAL ROUTE): 2536 N. Main Street

CITY, TOWN OR POST OFFICE AND STATE: Louisville Kentucky

ZIP CODE: 40502

DESCRIPTION — HEIGHT: 70" | WEIGHT: 155 | HAIR: Br | EYES: Br

BIRTHPLACE (City and State, or foreign country): Buechel, Ky.

CITIZENSHIP: U.S.A.

SOCIAL SECURITY NO: 411232677

IF A SOCIAL SECURITY NUMBER HAS NEVER BEEN ISSUED, CHECK THIS BLOCK → [ ]

Is this a retest? [X] No [ ] Yes date of last test

Have you taken or are you taking an FAA approved course for this test? [ ] No [X] Yes (If yes, give details below)

Graduation date

NAME OF SCHOOL: Kenair Flying School

CITY AND STATE: Louisville, Kentucky

CERTIFICATION: I CERTIFY that all of the statements made in this application are true, complete and correct to the best of my knowledge and belief and are made in good faith. Signature: John R. Doe

DO NOT WRITE IN THIS BLOCK — FOR USE OF FAA OFFICE ONLY

Applicant's identity established by:

CARD A

CATEGORY	TEST NUMBER	TAKE NO.	SECTIONS 1 2 3 4 5 6 7	EXPIRATION MONTH DAY YEAR

CARD B

CERTIFICATED SCHOOL NUMBER	RETEST TYP DATE OF ACTION 1 2 3	ID

FIELD OFFICE DESIGNATION

SIGNATURE of FAA Representative

INSTRUCTIONS FOR MARKING THE ANSWER SHEET: Completely darken only one circle for each question. DO NOT USE (X) OR (✓). Use black lead pencil furnished by examiner. To make corrections, open answer sheet so erasure marks will not show on page 2. Then erase incorrect response on page 4. On page 2 (copy) mark the incorrect response with a slash (/). Questions are arranged in VERTICAL sequence as indicated by the arrows.

1 ① ② ③ ④	23 ① ② ③ ④	45 ① ② ③ ④	67 ① ② ③ ④	89 ① ② ③ ④	111 ① ② ③ ④	133 ① ② ③ ④
2 ① ② ③ ④	24 ① ② ③ ④	46 ① ② ③ ④	68 ① ② ③ ④	90 ① ② ③ ④	112 ① ② ③ ④	134 ① ② ③ ④
3 ① ② ③ ④	25 ① ② ③ ④	47 ① ② ③ ④	69 ① ② ③ ④	91 ① ② ③ ④	113 ① ② ③ ④	135 ① ② ③ ④
4 ① ② ③ ④	26 ① ② ③ ④	48 ① ② ③ ④	70 ① ② ③ ④	92 ① ② ③ ④	114 ① ② ③ ④	136 ① ② ③ ④
5 ① ② ③ ④	27 ① ② ③ ④	49 ① ② ③ ④	71 ① ② ③ ④	93 ① ② ③ ④	115 ① ② ③ ④	137 ① ② ③ ④
6 ① ② ③ ④	28 ① ② ③ ④	50 ① ② ③ ④	72 ① ② ③ ④	94 ① ② ③ ④	116 ① ② ③ ④	138 ① ② ③ ④
7 ① ② ③ ④	29 ① ② ③ ④	51 ① ② ③ ④	73 ① ② ③ ④	95 ① ② ③ ④	117 ① ② ③ ④	139 ① ② ③ ④
8 ① ② ③ ④	30 ① ② ③ ④	52 ① ② ③ ④	74 ①	96 ① ② ③ ④	118 ① ② ③ ④	140 ① ② ③ ④
9 ① ② ③ ④	31 ① ② ③ ④	53 ① ② ③ ④	Sample ④	97 ① ② ③ ④	119 ① ② ③ ④	141 ① ② ③ ④
10 ① ② ③ ④	32 ① ② ③ ④	54 ① ② ③ ④	76 ① ② ③ ④	98 ① ② ③ ④	120 ① ② ③ ④	142 ① ② ③ ④
11 ① ② ③ ④	33 ① ② ③ ④	55 ① ② ③ ④	77 ① ② ③ ④	99 ① ② ③ ④	121 ① ② ③ ④	143 ① ② ③ ④
12 ① ② ③ ④	34 ① ② ③ ④	56 ① ② ③ ④	78 ① ② ③ ④	100 ① ② ③ ④	122 ① ② ③ ④	144 ① ② ③ ④
13 ① ② ③ ④	35 ① ② ③ ④	57 ① ② ③ ④	79 ① ② ③ ④	101 ① ② ③ ④	123 ① ② ③ ④	145 ① ② ③ ④
14 ① ② ③ ④	36 ① ② ③ ④	58 ① ② ③ ④	80 ① ② ③ ④	102 ① ② ③ ④	124 ① ② ③ ④	146 ① ② ③ ④
15 ① ② ③ ④	37 ① ② ③ ④	59 ① ② ③ ④	81 ① ② ③ ④	103 ① ② ③ ④	125 ① ② ③ ④	147 ① ② ③ ④
16 ① ② ③ ④	38 ① ② ③ ④	60 ① ② ③ ④	82 ① ② ③ ④	104 ① ② ③ ④	126 ① ② ③ ④	148 ① ② ③ ④
17 ① ② ③ ④	39 ① ② ③ ④	61 ① ② ③ ④	83 ① ② ③ ④	105 ① ② ③ ④	127 ① ② ③ ④	149 ① ② ③ ④
18 ① ② ③ ④	40 ① ② ③ ④	62 ① ② ③ ④	84 ① ② ③ ④	106 ① ② ③ ④	128 ① ② ③ ④	150 ① ② ③ ④
19 ① ② ③ ④	41 ① ② ③ ④	63 ① ② ③ ④	85 ① ② ③ ④	107 ① ② ③ ④	129 ① ② ③ ④	
20 ① ② ③ ④	42 ① ② ③ ④	64 ① ② ③ ④	86 ① ② ③ ④	108 ① ② ③ ④	130 ① ② ③ ④	
21 ① ② ③ ④	43 ① ② ③ ④	65 ① ② ③ ④	87 ① ② ③ ④	109 ① ② ③ ④	131 ① ② ③ ④	
22 ① ② ③ ④	44 ① ② ③ ④	66 ① ② ③ ④	88 ① ② ③ ④	110 ① ② ③ ④	132 ① ② ③ ④	

DEPARTMENT OF TRANSPORTATION · FEDERAL AVIATION ADMINISTRATION

QUESTION SELECTION SHEET

PA-3A

USE WITH QUESTION BOOK PA-3 ONLY!

TITLE	TEST NO.
PRIVATE PILOT - AIRPLANE	237498

NAME _____

NOTE: IT IS PERMISSIBLE TO MARK ON THIS SHEET.

On Answer Sheet For Item No.	Answer Question Number	On Answer Sheet For Item No.	Answer Question Number	On Answer Sheet For Item No.	Answer Question Number
1	201	21	414	41	604
2	214	22	420	42	612
3	220	23	425	43	652
4	226	24	433	44	665
5	229	25	440	45	680
6	236	26	456	46	699
7	241	27	462	47	700
8	253	28	470	48	718
9	258	29	478	49	724
10	262	30	481	50	750
11	274	31	484	51	775
12	285	32	498	52	799
13	288	33	501	53	803
14	309	34	506	54	845
15	318	35	515	55	853
16	366	36	522	56	868
17	376	37	528	57	875
18	382	38	534	58	905
19	392	39	552	59	951
20	403	40	560	60	976

For Official Use Only

USE ONLY TO IDENTIFY CODES, not as study outline since Private and Commercial areas are combined. To determine the subject areas you missed, compare subject matter codes on your AC Form 8080-2, Airman Written Test Report, with coded items on this list of subjects. The total number of questions you missed are NOT reflected by the number of subject matter codes shown on the test report, since ONE OR MORE questions may have been asked in each item shown.

FEDERAL AVIATION REGULATIONS

PART 1; 71: DEFINITIONS/CONTROLLED AIRSPACE

A01 - Air commerce
A02 - Airport traffic area
A03 - Ceiling
A04 - Commercial operator
A05 - Flight level
A06 - Flight visibility
A07 - Interstate air commerce
A08 - Large aircraft
A09 - Major alteration
A10 - Major repair
A11 - Pilot in command
A12 - Second in command
A13 - Federal airway
A14 - Control area
A15 - Continental control area
A16 - Control zone
A17 - Route segment
A18 - Terminal control area
A19 - Positive control area

PART 61: CERTIFICATION: PILOTS/FLIGHT INSTRUCTORS

B01 - Required certificate/rating
B02 - Certificates and ratings issued
B03 - Expired pilot certificates/reissuance
B04 - Carriage of narcotic drugs/marihuana
B05 - Duration of pilot certificates
B06 - Duration of medical certificates
B07 - General limitations
B08 - Pilot logbooks
B09 - Operations during medical deficiency
B10 - Second in command qualifications
B11 - Recent experience: Pilot in command
B12 - Pilot in command proficiency check
B13 - Falsification, reproduction, alteration
B14 - Change of address
B15 - Glider towing: experience/instruction
B16 - Private privileges/limitations
B17 - Free balloon rating: limitations
B18 - Commercial pilot privileges/limitations
B19 - Airship/free balloon: limitations

PART 91: GENERAL OPERATING RULES-SUBPART A

C01 - Responsibility of pilot in command
C02 - Pilot in command - more than one pilot
C03 - Preflight action
C04 - Flight crewmembers at stations
C05 - Interference with crewmembers
C06 - Careless or reckless operation
C07 - Liquor and drugs
C08 - Flights between Mexico/United States
C09 - Dropping objects
C10 - Fastening of safety belts
C11 - Parachutes and parachuting
C12 - Towing: gliders or other than gliders
C13 - Portable electronic devices
C14 - Simulated instrument and flight tests
C15 - ATC transponder equipment requirements
C16 - VOR equipment check for IFR operations
C17 - Fuel requirements - IFR conditions
C18 - Civil aircraft: certificates required
C19 - Special authorizations - foreign aircraft
C20 - Aircraft airworthiness
C21 - Aircraft operating limitations/markings
C22 - Supplemental oxygen
C23 - Instrument and equipment requirements
C24 - Flight recorders; cockpit voice recorders
C25 - Automatic reported altitude/pilot's reference
C26 - Transport airplane weight limitation
C27 - Maximum weights for airplanes in Alaska
C28 - Limited/restricted aircraft limitations
C29 - Experimental aircraft limitations
C30 - Special rules for foreign civil aircraft
C31 - Ferry flight with one engine inoperative
C32 - Emergency exits for airplanes
C33 - Aural speed warning device
C34 - Altitude alerting system or device
C35 - Emergency locator transmitters
C36 - Report: aircraft identification/activity

PART 91: GENERAL FLIGHT RULES-SUBPART B

D01 - Waivers
D02 - Operating near other aircraft
D03 - Right-of-way rules; operations
D04 - Aircraft speed
D05 - Acrobatic flight
D06 - Aircraft lights
D07 - Complying - ATC clearances/instructions
D08 - ATC light signals
D09 - Minimum safe altitudes; general
D10 - Altimeter settings
D11 - Flight plan; information required
D12 - Operating - in vicinity of airport
D13 - Operation - airport with control tower
D14 - Operation - airport without tower
D15 - Flight in terminal control areas
D16 - Temporary flight restrictions
D17 - Flight test areas
D18 - Restricted and prohibited areas
D19 - Positive control areas; route segments
D20 - Jet advisory areas
D21 - Operations to, or over, Cuba
D22 - Flight limitation - space flight recovery
D23 - Operation: aircraft of Cuban registry
D24 - Flight restriction - Presidential/parties
D25 - Basic VFR weather minimums
D26 - Special VFR weather minimums
D27 - VFR cruising altitude or flight level
D28 - ATC clearance/flight plan required (IFR)
D29 - Takeoff/landing under IFR
D30 - Limitations-instrument approach procedure
D31 - Minimum altitudes for IFR operations
D32 - IFR cruising altitude/flight level
D33 - Course to be flown (IFR)
D34 - IFR radio communications
D35 - IFR two-way communications failure
D36 - Malfunction reports (IFR)
D37 - ATC transponder test/inspections

Written Test Subject Matter Codes (Continued) Excerpts

PART 91: MAINTENANCE, PREVENTATIVE MAINTENANCE, AND ALTERATIONS-SUBPART C

E01 - General maintenance and alterations
E02 - Maintenance required
E03 - Carrying persons after repair/alteration
E04 - Inspections/progressive inspection
E05 - Altimeter system tests/inspections
E06 - Maintenance records/transfer of records
E07 - Rebuilt engine maintenance records
E08 - ATC transponder test/inspection

PART 91: LARGE AND TURBINE-POWERED MULTIENGINE AIRPLANES-SUBPART D

F01 - Applicability
F02 - Flying equipment/operating information
F03 - Familiarity with operating limitations and emergency equipment
F04 - Equipment - over-the-top/night VFR
F05 - Survival equipment/overwater operations
F06 - Radio equipment/overwater operations
F07 - Emergency equipment
F08 - Flight altitude rules
F09 - Smoking and safety belt signs
F10 - Passenger briefing
F11 - Carry-on baggage
F12 - Carriage of cargo
F13 - VFR fuel requirements
F14 - Operating in icing conditions
F15 - Flight engineer requirements
F16 - Second in command requirements
F17 - Flight attendant requirements
F18 - Inspection program

PART 135: AIR TAXI OPERATORS AND COMMERCIAL OPERATORS OF SMALL AIRCRAFT

G01 - Subpart A - General
G02 - Subpart B - Rules-ATCO certificate holder
G03 - Subpart C - Operating rules
G04 - Subpart D - Crewmember qualifications
G05 - Subpart E - Aircraft and equipment

NATIONAL TRANSPORTATION SAFETY BOARD

PART 830: NOTIFICATION AND REPORTING ACCIDENTS

H01 - Applicability
H02 - Definitions
H03 - Immediate notification and information
H04 - Preserving wreckage/mail/cargo/records
H05 - Reports/statements to be filed

FAA ADVISORY CIRCULARS

I01 - Series 00 General
I02 - Series 20 Aircraft
I03 - Series 60 Airmen
I04 - Series 70 Airspace
I05 - Series 90 Air Traffic Control and General Operations
I06 - Series 120 Air Carrier and Commercial Operators and Helicopters
I07 - Series 150 Airports
I08 - Series 170 Air Navigation Facilities

FLIGHT INFORMATION PUBLICATIONS

J01 - Glossary of aeronautical terms
J02 - Airport lighting/marking/aids
J03 - Air navigation radio aids
J04 - Visual approach slope indicator
J05 - Controlled/uncontrolled airspace
J06 - Operating at non-tower airports
J07 - Special use airspace-prohibited, restricted, ISJTA, alert areas
J08 - Automatic terminal information service
J09 - ATC departure/enroute/arrival procedures
J10 - Radar traffic information service
J11 - Stage I, II, III terminal radar service
J12 - Aeronautical advisory stations (UNICOM)
J13 - Radiotelephone phraseology/technique
J14 - Traffic/wind direction indicators
J15 - Obtaining weather information/briefing
J16 - Flight plans
J17 - VHF/UHF direction finder
J18 - AOIZ and designated mountainous areas
J19 - Medical facts for pilots
J20 - Good operating practices
J21 - Obtaining airport/heliport data
J22 - FSS/Weather Service telephone numbers
J23 - Obtaining radio facility/FSS data
J24 - Special notices/Special Operations
J25 - Notices to airmen (NOTAMS)
J26 - Terminal radar service areas
J27 - Terminal area graphic notices
J28 - Restrictions to enroute navigation aids
J29 - VOR receiver check points
J30 - Parachute jumping areas

AVIATION WEATHER

K01 - Surface weather charts
K02 - Weather depiction charts
K03 - Prognostic charts
K04 - Significant weather charts
K05 - Pressure analyses charts
K06 - Winds aloft charts/forecasts
K07 - Radar summary charts/reports
K08 - Area forecasts
K09 - Terminal forecasts
K10 - Severe weather forecasts
K11 - Elements of forecasting
K12 - Aviation weather (Sequence) reports
K13 - AIRMETS, SIGMETS, PIREPS
K14 - Weather broadcasts-scheduled/advisories
K15 - Transcribed weather broadcasts (TWEB)
K16 - Significance of reported weather
K17 - Significance of cloud types
K18 - Determining cloud-height from reports
K19 - Recognition of critical weather
K20 - Temperature/dewpoint relationship
K21 - Fog types and their causes
K22 - Air mass characteristics
K23 - Frontal weather
K24 - Thunderstorms/squall lines
K25 - Aircraft icing
K26 - Standard temperatures/pressures
K27 - Standard lapse rates
K28 - Pressure systems/general circulation
K29 - Mountain effects/turbulence/weather
K30 - Information in a weather briefing
K31 - Soaring weather-thermals
K32 - Soaring weather-ridge lift
K33 - Soaring weather-mountain waves

NAVIGATIONAL - GENERAL

L01 - Sectional chart interpretation
L02 - Relating chart symbols to FAR
L03 - Pilotage/recognition of landmarks
L04 - Determining courses/distances on charts
L05 - Planning traffic pattern
L06 - Navigation computer principles
L07 - Computing headings/courses
L08 - Computing time, distance, speed, fuel
L09 - Computing rates-of-climb/descent
L10 - Computing wind direction/speed in flight
L11 - Computing off-course corrections
L12 - Selecting VFR cruising altitudes

RADIO NAVIGATION

M01 - Characteristics of VOR facilities
M02 - Tuning VOR receivers

Written Test Subject Matter Codes (Continued) Excerpts

M03 - Identifying VOR stations
M04 - VOR interpretation/orientation
M05 - Intercepting VOR radials
M06 - Tracking VOR radials
M07 - Groundspeed checks using VOR radials
M08 - VOR frequency interference
M09 - VOR test signals/VOR receiver checks
M10 - Characteristics of ADF facilities
M11 - Tuning ADF receivers
M12 - Identifying stations used for ADF
M13 - ADF/RMI interpretation/orientation
M14 - Intercepting ADF/RMI bearings
M15 - Tracking ADF/RMI bearings or "homing"
M16 - Marker beacons/outer compass locators

RADIO COMMUNICATIONS

N01 - VHF radio communications/phraseology
N02 - Position reporting procedures
N03 - Tower/FSS/enroute-advisories/instructions
N04 - FSS communications procedures
N05 - Obtaining emergency assistance
N06 - Lost procedure when radio is inoperative
N07 - Use of proper communications frequencies

AERODYNAMICS AND PRINCIPLES OF FLIGHT

001 - Laws of motion
002 - Functions of the flight controls
003 - Principles of airfoils
004 - Forces acting on the aircraft
005 - Flight controls/axes of the aircraft
006 - Lift/drag during turns
007 - Lift versus angle of attack
008 - Lift/thrust versus air density
009 - Effect of ice/snow/frost on airfoils
010 - Power versus climb/descent/level flight
011 - Gyroscopic precession
012 - Coning (helicopter)
013 - Translating tendency (helicopter)
014 - Ground effect
015 - Translational lift (helicopter)
016 - Transverse flow effect (helicopter)
017 - Loads/load factors
018 - Stability/controllability
019 - Stall/spins
020 - Effects of flaps, spoilers, dive brakes
021 - Relative wind/angle of attack
022 - Effect of wind during turns
023 - Torque effects - P factor
024 - Dissymmetry of lift (helicopter)

AIRCRAFT AND ENGINE OPERATION - GENERAL

P01 - Fuel injection/carburetor principles
P02 - Reciprocating engine principles
P03 - Preflight/postflight safety practices
P04 - Use of mixture/throttle/propeller control
P05 - Use of proper fuel grade/type
P06 - Fuel system operation
P07 - Engine starting/shutdown
P08 - Detonation cause/effect
P09 - Fuel contamination-prevention/elimination
P10 - Emergency-engine/systems/equipment/fire
P11 - Carburetor ice-cause/detection/elimination
P12 - Wake turbulence-causes/precautions
P13 - Crosswind takeoff/landing
P14 - Proper loading of the aircraft
P15 - Interpreting engine instruments
P16 - Ignition or electrical system/units
P17 - Recovery from critical flight situations
P18 - Carburetor heat effect on mixture
P19 - Aircraft operating limitations
P20 - Manifold pressure versus RPM
P21 - High altitude operations/pressurization
P22 - Use of oxygen and oxygen equipment
P23 - Mid-air collision avoidance precautions

AIRCRAFT/ENGINE PERFORMANCE - GENERAL

Q01 - Takeoff charts (airplane/rotorcraft)
Q02 - Rate-of-climb charts (airplane/rotorcraft)
Q03 - Cruise charts (airplane/rotorcraft)
Q04 - Maximum safe crosswind charts (airplane)
Q05 - Use of Denalt computer (airplane)
Q06 - Landing charts (airplane/rotorcraft)
Q07 - Altitude-airspeed charts (rotorcraft)
Q08 - Stall speed charts (airplane)
Q09 - Hovering ceiling charts (rotorcraft)
Q10 - Airspeed correction charts (airplane)
Q11 - Predicting performance (helicopter)
Q12 - Computing density/pressure altitudes
Q13 - Effect of density altitude on performance
Q14 - Effect of weight/balance on performance
Q15 - Critical performance speeds - "V speeds"
Q16 - Effect of wind on aircraft performance
Q17 - Bank/speed versus rate/radius of turn
Q18 - Stall speed versus altitude or attitude
Q19 - Stall speed versus indicated/true airspeed
Q20 - Obstacle clearance takeoff/landing
Q21 - Best angle/best rate-of-climb (airplane)
Q22 - Computation of gross weight/useful load
Q23 - Computation of center gravity
Q24 - Minimum sink speed (glider)
Q25 - Glide ratio - L/D (glider)
Q26 - Speed-to-fly (glider)
Q27 - Best-glide-speed (glider)
Q28 - Glider performance curves (glider)
Q29 - Airspeed for searching for lift (glider)

FLIGHT INSTRUMENTS AND SYSTEMS

R01 - Attitude indicator operation/errors
R02 - Heading indicator operation/errors
R03 - Turn indicator/coordinator
R04 - Altimeter operation/errors
R05 - Vertical speed indicator operation/errors
R06 - Airspeed indicator operation/errors
R07 - Vacuum systems/instruments
R08 - Pitot-static systems/instruments
R09 - Magnetic compass operation/errors
R10 - Altimeter setting procedure/significance
R11 - Pressure altitude-significance/obtaining
R12 - Gyroscopic principles

AIRPLANE OPERATION

U01 - Normal/crosswind takeoff/landing
U02 - Maximum performance takeoff/landing
U03 - Emergency landings
U04 - Maneuvering speed
U05 - Taxiing with strong surface wind
U06 - Flaps operation
U07 - Retractable landing gear operation
U08 - Controllable pitch propeller operation
U09 - Supercharged engine operation
U10 - Multiengine critical engine failure

MAXIMUM TIME ALLOWED FOR TEST: FOUR HOURS

GENERAL INSTRUCTIONS

READ CAREFULLY

1. This book contains 778 questions beginning with number 201. You are required to answer 60 QUESTIONS ONLY.
2. Refer to the QUESTION SELECTION SHEET to determine which 60 questions you are to answer.
3. Make sure you were issued a QUESTION SELECTION SHEET that is marked for use with Question Book "PA-3."
4. Mark your answers in the appropriate places on the ANSWER SHEET.
5. All Supplementary information required to answer certain questions can be found on the page opposite the question or near the question.
6. DO NOT MARK ON THIS QUESTION BOOK. A plastic overlay sheet is provided to place over performance charts and illustrations. This permits marking on the plastic sheet without defacing the question book.
7. Read each question carefully and select the best answer. Always answer questions in terms of current regulations, procedures, or techniques.
8. Assume that you are a certificated private pilot as you take this test.
9. It will not be necessary to draw course lines on the sectional chart segments, since this has been done for you.
10. The last 9 pages of this book contain legends for the Sectional Chart and the Airport/Facility Directory. A list of Notices to Airmen "Abbreviations" is also included.
11. The MINIMUM passing grade is 70 percent.

SAMPLE INSTRUCTION SHEET FOR QUESTION BOOK

WARNING

§ WRITTEN TESTS: CHEATING OR OTHER UNAUTHORIZED CONDUCT

(a) EXCEPT AS AUTHORIZED BY THE ADMINISTRATOR, NO PERSON MAY—

(1) COPY, OR INTENTIONALLY REMOVE, A WRITTEN TEST UNDER THIS PART

(2) GIVE TO ANOTHER, OR RECEIVE FROM ANOTHER, ANY PART OR COPY OF THAT TEST.

(3) GIVE HELP ON THAT TEST TO, OR RECEIVE HELP ON THAT TEST FROM, ANY PERSON DURING THE PERIOD THAT TEST IS BEING GIVEN

(4) TAKE ANY PART OF THAT TEST IN BEHALF OF ANOTHER PERSON.

(5) USE ANY MATERIAL OR AID DURING THE PERIOD THAT TEST IS BEING GIVEN, OR

(6) INTENTIONALLY CAUSE, ASSIST, OR PARTICIPATE IN ANY ACT PROHIBITED BY THIS PARAGRAPH.

(b) NO PERSON WHO COMMITS AN ACT PROHIBITED BY PARAGRAPH (a) OF THESE SECTIONS IS ELIGIBLE FOR ANY AIRMAN OR GROUND INSTRUCTOR CERTIFICATE OR RATING UNDER THIS CHAPTER FOR A PERIOD OF ONE YEAR AFTER THE DATE OF THAT ACT. IN ADDITION, THE COMMISSION OF THAT ACT IS THE BASIS FOR SUSPENDING OR REVOKING ANY AIRMAN OR GROUND INSTRUCTOR CERTIFICATE OR RATING HELD BY THAT PERSON.

PRIVATE PILOT-AIRPLANE

Written Test Questions

NOTE: The Written Test Subject Matter Code appears opposite the first response of each test question.

001. The Continental Control Area for the 48 contiguous states consists of airspace

A15
1- at and above 14,500 feet MSL.
2- at and below 14,500 feet MSL.
3- within all restricted areas and prohibited areas.
4- below 10,000 feet MSL.

002. "Ceiling" as defined by Federal Aviation Regulations, means the height above the earth's surface of the

A03
1- lowest layer of clouds that is reported as "broken" or "overcast."
2- lowest layer of clouds that is reported as "scattered," "broken," or "thin."
3- lowest reported "obscuration" and the highest layer of clouds that is reported as "overcast."
4- highest layer of clouds that is reported as "broken" or "thin."

003. Where are Airport Traffic Areas in effect?

A02
1- At all airports.
2- Only at airports that have an operating control tower.
3- Only at airports within a control zone.
4- At all airports that have a Flight Service Station on the field.

004. Airspace within a horizontal radius of 5 statute miles from the geographical center of any airport at which a control tower is operated and which extends from the surface up to, but not including, 3,000 feet above the surface, is defined as

A02
1- an Airport Advisory Area.
2- a Control Area.
3- an Airport Traffic Area.
4- a Control Zone.

005. An Airport Traffic Area extends from the surface up to, but does not include, what altitude above the elevation of the airport?

A02
1- 1,000 feet.
2- 2,000 feet.
3- 3,000 feet.
4- 4,000 feet.

006. An Airport Traffic Area is automatically in effect when

A02
1- radar service is available.
2- nighttime hours exist.
3- the weather is below VFR minimums.
4- its associated control tower is in operation.

007. An Airport Traffic Area is that airspace within a horizontal radius of 5 statute miles from the geographical center of an airport, at which a control tower is in operation, and extends

A02
1- from the surface upward to 5,000 feet.
2- upward from 700 feet above the surface.
3- upward from 1,200 feet above the surface.
4- from the surface upward to, but not including, 3,000 feet.

008. Airport Traffic Areas are in effect

A02
1- only at airports that have operating control towers.
2- at all airports.
3- only at airports within a control zone.
4- at all airports located in restricted areas.

009. To act as pilot in command of an aircraft carrying passengers at night, you must have performed, within the preceding 90 days, three takeoffs and three landings

B11
1- to a full stop, at night, in the same category and class of aircraft to be used.
2- to a full stop, day or night, in any aircraft.
3- touch and go or full stop, at night, in any aircraft.
4- touch and go or full stop, either day or night, in any aircraft.

010. To act as pilot in command of a single-engine nosewheel-equipped airplane, regulations require recent experience before carrying passengers. To meet this requirement you must, within the preceding

B11
1- 60 days, have made at least three takeoffs and three landings to a full stop in any single-engine airplane.
2- 90 days, have made at least three takeoffs and three landings to a full stop in an aircraft of the same category, class, and type as the one you will be flying.
3- 90 days, have made at least three takeoffs and three landings in an aircraft of the same category and class as the one you will be flying.
4- 60 days, have made at least five takeoffs and five landings to a full stop in an aircraft of the same category as the one you will be flying.

011. To act as pilot in command of an aircraft, one must show by logbook endorsement the satisfactory (1) accomplishment of a flight review, or (2) completion of a pilot proficiency check within the preceding

B11
1- 6 months.
2- 12 months.
3- 24 months.
4- 36 months.

012. If official sunset is 1930 MST and you do not meet the recency of experience requirements for a night flight carrying passengers, you must land at or before what time to comply with regulations?

B11
1- 1730 MST.
2- 1830 MST.
3- 1800 MST.
4- 1930 MST.

013. To act as pilot in command when carrying passengers in a single-engine land airplane, you are required to have made within the preceding 90 days, at least

B11
1- three takeoffs and three landings in an airplane of the same class.
2- five takeoffs, five full-stop landings, and 1 hour flight time in a single-engine land airplane.
3- five takeoffs and five landings in a single-engine land airplane.
4- three takeoffs and three landings in any airplane.

014. Suppose that you, a private pilot, were issued a Third-Class Medical Certificate 18 months ago. To act as pilot in command, this medical certificate

B06
1- has expired; therefore you cannot act as pilot in command, but you can serve as a crewmember.
2- is current, but limits your flights to solo only.
3- has expired, and you cannot exercise the privileges of a private pilot.
4- is current, and can be used to exercise all of the privileges of a private pilot.

015. Assume that your Class III Medical Certificate was issued to you on October 1, 1978. This medical certificate is valid until the end of

B06
1- October 1980.
2- October 1979.
3- September 1980.
4- September 1979.

016. A Class III Medical Certificate was issued to you on February 1, 1978. This certificate expires at the end of the last day of

B06
1- February 1979.
2- February 1980.
3- January 1980.
4- January 1979.

017. Assume you were issued a Third-Class Medical Certificate 15 months ago. To act as pilot in command, this medical certificate

B06
1- has expired, therefore you cannot act as pilot in command, but you can serve as a crewmember.
2- is current, and can be used to exercise all of the privileges of a private pilot.
3- has expired, and you cannot exercise the privileges of a private pilot.
4- is current, but limits your flights to solo only.

018. In regard to the duration of Private Pilot Certificates, which statement is true?

B05
1- They expire after a duration of 12 months.
2- They expire after a duration of 24 months.
3- They are issued without a specific expiration date.
4- When recency of experience requirements are not met the certificates expire.

019. Your current and appropriate pilot and medical certificates must be in your personal possession

B01
1- only when acting as pilot in command.
2- only when acting as pilot in command for compensation or hire.
3- only when you are acting as pilot in command while passengers are aboard.
4- any time you are acting as pilot in command or in any other capacity as a required pilot flight crewmember.

020. If you are a private pilot acting as pilot in command, or in any other capacity as a required pilot flight crewmember, you must have in your personal possession while aboard the aircraft

B01
1- your pilot logbook to show that you have met recent experience requirements to serve as pilot in command.
2- a current endorsement on your pilot certificate to show that you have satisfactorily accomplished a flight review.
3- your current and appropriate pilot and medical certificates.
4- a current logbook endorsement to show that you have satisfactorily accomplished a flight review.

021. Current and appropriate pilot and medical certificates must be in your personal possession

B01
1- only when acting as pilot in command for compensation or hire.
2- only when you are acting as pilot in command away from the vicinity of an airport.
3- any time you are acting as pilot in command or in any other capacity as a required crewmember.
4- only when you are acting as pilot in command while passengers are aboard.

022. A control zone may include one or more airports and is normally a circular area with a radius of

A16
1- 1 mile.
2- 2 miles.
3- 5 miles.
4- 7 miles.

023. Which statement is true regarding control zones?

A16
1- They extend upward from 700 feet AGL and terminate at the base of the Continental Control Area.
2- Unless they underlie the Continental Control Area, control zones have no upper limit.
3- Designated control zones are located only at those airports which have a control tower in operation.
4- They are not depicted on sectional aeronautical charts.

024. If an in flight emergency requires immediate action, a pilot in command may

C01
1- deviate from Federal Aviation Regulations to the extent required to meet the emergency, but must submit a written report within 24 hours to the Administrator.
2- not deviate from regulations unless permission is obtained from Air Traffic Control.
3- deviate from any rule of Federal Aviation Regulations to the extent required to meet the emergency.
4- not deviate from regulations unless prior to the deviation approval is granted by the Administrator.

025. According to regulations pertaining to general privileges and limitations, a private pilot may

B16
1- not be paid in any manner for the operating expenses of a flight.
2- charge a reasonable fee for acting as pilot in command.
3- share the operating expenses of a flight with the passengers.
4- be paid for the operating expenses of a flight if at least five take-offs and five landings were made by the pilot within the preceding 90 days.

026. Which of the following statements is true regarding private pilot privileges and limitations?

B16
1- A private pilot may share the operating expenses of a flight with the passengers.
2- A private pilot may act as pilot in command of an aircraft carrying passengers for compensation if the flight is in connection with a business or employment.
3- A private pilot may act as pilot in command of an aircraft carrying only property for hire if the flight is in connection with a business.
4- A private pilot may act as pilot in command demonstrating an aircraft to a prospective buyer if the private pilot has logged at least 100 hours of flight time in the aircraft being shown.

027. Which statement is true regarding private pilot privileges and limitations? A pilot may

B16
1- act as pilot in command of an aircraft carrying property for hire only if the flight is in connection with a business.
2- share the operating expenses of a flight with the passengers.
3- act as pilot in command while demonstrating an aircraft to a prospective buyer if the private pilot has logged at least 100 hours of flight time in the aircraft being shown.
4- act as pilot in command of an aircraft carrying passengers for compensation or hire if the flight is in connection with a business or employment.

028. According to regulations pertaining to general privileges and limitations, a private pilot may

B16
1- charge a reasonable fee for acting as pilot in command.
2- share the operating expenses of a flight with the passengers.
3- be paid for the operating expenses of a flight if at least three take-offs and three landings were made by the pilot within the preceding 90 days.
4- not be paid in any manner for the operating expenses of a flight.

029. If you have made a change in your permanent mailing address, you may not exercise the privileges of your pilot certificate after 30 days from the date you moved unless you

B14
1- forward your certificate to the FAA Airmen Certification Branch and request reissuance.
2- forward your certificate to the local General Aviation District Office (GADO) for a change of address.
3- notify the FAA Airmen Certification Branch in writing of your change of address.
4- request your local General Aviation District Office (GADO) to issue you a temporary pilot certificate.

030. Assume that your Private Pilot Certificate was issued on March 15, 1978. Unless you complete a proficiency check for another pilot certificate, rating, or operating privilege, to act as pilot in command of an aircraft you will be due for a flight review no later than

B11
1- March 15, 1979.
2- March 15, 1980.
3- March 31, 1981.
4- March 31, 1979.

031. If you do not meet the recency of experience requirements for a night flight carrying passengers, and official sunset is 1900 EST, you must land at or before what time to comply with regulations?

B11
1- 1830 EST.
2- 1900 EST.
3- 1930 EST.
4- 2000 EST.

032. To act as pilot in command of an aircraft, one must show by logbook endorsement that (1) a flight review has been satisfactorily accomplished, or (2) a pilot proficiency check has been satisfactorily completed within the preceding

B11
1- 6 months.
2- 12 months.
3- 24 months.
4- 36 months.

033. Assume that official sunset is 1745 CST. If you do not meet the recency of experience requirements for a night flight carrying passengers, you must land at or before what time to comply with regulations?

B11
1- 1715 CST.
2- 1745 CST.
3- 1845 CST.
4- 1915 CST.

034. Federal Aviation Regulations (FARs) stipulate that in order for a person to act as pilot in command of an aircraft, that person must show by logbook endorsement that (1) a flight review has been satisfactorily accomplished, or (2) a proficiency check for a pilot certificate, rating, or operating privileges has been satisfactorily completed within the preceding

B11
1- 24 months.
2- 18 months.
3- 12 months.
4- 6 months.

035. To act as pilot in command of an aircraft carrying passengers during the period beginning 1 hour after sunset and ending 1 hour before sunrise, a pilot must, within the preceding 90 days, have

B11
1- made five takeoffs and five landings to a full stop in the same make and model of aircraft to be used.
2- made three takeoffs and three landings to a full stop in the category and class aircraft to be used.
3- made five takeoffs and five landings to a full stop in the category and class aircraft to be used.
4- flown a minimum of 3 hours.

036. To act as pilot in command of an airplane with passengers aboard, you must have made at least three takeoffs and three landings in an aircraft of the same category and class within the preceding

B11
1- 90 days.
2- 120 days.
3- 12 months.
4- 24 months.

037. To act as pilot in command of a single-engine land airplane with passengers aboard, regulations require that within the preceding 90 days, you must have made at least

B11
1- three takeoffs and three landings in an airplane of the same class.
2- five takeoffs and five landings to a full stop with a minimum of 1 hour flight time in a single-engine land airplane.
3- five takeoffs and five landings in the same type of airplane.
4- three takeoffs and three landings in any airplane.

038. No person may operate a civil aircraft unless the Airworthiness Certificate, or special flight permit or authorization required by regulations, is

C18
1- on file in the owner's operation office where the aircraft is based.
2- filed with the other required certificates or documents within the aircraft to be flown.
3- displayed at the cabin or cockpit entrance so that it is legible to passengers or crewmembers.
4- included in the approved logbooks for the aircraft to be flown.

039. During flight, which of these aircraft documents is required to be aboard?

C18
1- Owner's Manual.
2- Weight and Balance Handbook.
3- Aircraft and engine logbooks.
4- Registration Certificate.

040. During flight, which of these aircraft documents is required to be aboard?

C18
1- Current aircraft Airworthiness Certificate.
2- Weight and Balance Handbook.
3- Owner's Manual.
4- Aircraft and engine logbooks.

041. Seatbelts are required to be properly secured about which persons in the airplane and when?

C10
1- Occupants during flight in moderate or severe turbulence only.
2- Each person on board the aircraft during the entire flight.
3- Occupants during takeoffs and landings.
4- Crewmembers only, during takeoffs and landings.

042. Regulations require that seatbelts in an airplane be properly secured about the

C10
1- passengers and crewmembers during the entire flight.
2- occupants during flight in moderate or severe turbulence only.
3- crewmembers only, during takeoffs and landings.
4- occupants during takeoffs and landings.

043. The use of seatbelts during takeoffs and landings in airplanes of U.S. registry is

C10
1- required for crewmembers only.
2- required by regulations in air carrier operations only.
3- not required by regulations although their use is considered a good operating practice.
4- required by regulations.

044. Seatbelts in an airplane are required to be properly secured about the

C10
1- occupants during flights in moderate or severe turbulence only.
2- crewmembers and passengers during the entire flight.
3- occupants during takeoffs and landings.
4- crewmembers only, during takeoffs and landings.

045. Before starting to taxi, you advise your passengers to fasten their seatbelts. This requirement is

C10
1- a safety measure during takeoffs and landings, but is not mandatory.
2- mandatory not only during takeoffs and landings, but also during the entire flight.
3- mandatory only for Air Taxi Operators and airline operations.
4- mandatory for all passengers in civil aircraft during takeoffs and landings.

046. Regulations require that seatbelts be fastened about passengers

C10
1- during all periods of flight.
2- only during flight in turbulent flight conditions.
3- only during takeoffs and landings.
4- only when advised by the pilot in command to do so.

047. No person may act as a crewmember of a civil aircraft while using any drug that affects his faculties in any way contrary to safety; or has consumed alcoholic beverages within the preceding

C07
1- 8 hours.
2- 12 hours.
3- 16 hours.
4- 24 hours.

048. Is it permissible for a pilot to allow a person who is obviously under the influence of intoxicating liquors or drugs to be carried aboard an aircraft? This is permitted

C07
1- only if the person does not have access to the cockpit or pilot's compartment.
2- only if the person is a medical patient under proper care.
3- only after a waiver has been obtained from the FAA.
4- under no circumstances.

049. No person may act as a crewmember of a civil aircraft if that person has consumed any alcoholic beverages within the preceding

C07
1- 8 hours.
2- 10 hours.
3- 16 hours.
4- 24 hours.

050. In addition to other preflight action for a VFR cross-country flight, regulations specifically require the pilot in command to

C03
1- determine runway lengths at the airports of intended use.
2- check each fuel tank visually to ensure that it is always filled to capacity.
3- file a flight plan for the proposed flight.
4- perform a VOR equipment accuracy check prior to the proposed flight.

051. Preflight action as required by regulations for all flights away from the vicinity of an airport shall include a study of the weather, taking into consideration fuel requirements, and

C03
1- an alternate course of action if the flight cannot be completed as planned.
2- the filing of a flight plan.
3- the designation of an alternate airport.
4- an operational check of your navigation radios.

052. In addition to other preflight action for a VFR cross-country flight, regulations specifically require the pilot in command to

C03
1- file a flight plan for the proposed flight.
2- check each fuel tank visually to ensure that it is always filled to capacity.
3- determine runway lengths at the airports of intended use.
4- check the accuracy of the omninavigational equipment if the flight is to be made on airways.

053. In your preflight action for a cross-country flight, if you obtain only the Aviation Weather (Hourly Sequence) Reports and do not utilize available forecasts, you are

C03
1- violating regulations by not also reviewing the weather forecasts.
2- exercising poor judgment but not violating regulations.
3- adhering to regulations since the pilot in command is not required to check forecasts.
4- adhering to regulations unless the flight is being conducted in interstate air commerce.

054. In addition to other preflight action, regulations specifically require that, for VFR flights not in the vicinity of an airport, the pilot in command shall determine

C03
1- that aircraft and engine logbooks are aboard the aircraft.
2- alternatives available if the planned flight cannot be completed.
3- visually that each fuel tank is always filled to capacity.
4- the accuracy of the omnireceiver if airways are to be flown.

055. When two aircraft are approaching each other head-on or nearly so, which aircraft should give way?

D03
1- Regardless of the aircraft categories, a glider has the right-of-way over all engine-driven aircraft.
2- If the aircraft are of different categories, an airship would have the right-of-way over a helicopter.
3- Regardless of the aircraft categories, the pilot of each aircraft shall alter course to the right.
4- If the aircraft are of different categories, an airship would have the right-of-way over an airplane.

056. Assume two aircraft of different categories are converging at approximately the same altitude. Which of the following is a true statement?

D03
1- Neither aircraft has the right-of-way and both aircraft should alter course to avert a collision.
2- An aircraft towing or refueling other aircraft has the right-of-way over all other engine-driven aircraft.
3- An airship has the right-of-way over a glider.
4- A jet airliner has the right-of-way over all other aircraft.

057. In order to determine when the battery of an Emergency Locator Transmitter (ELT) will need replacement, regulations require that the expiration date be

C35
1- listed on the Airworthiness Certificate.
2- marked on the aircraft instrument panel placard.
3- marked on the outside of the transmitter.
4- listed in the engine logbook.

058. When are Emergency Locator Transmitter (ELT) batteries required to be replaced or recharged?

C35
1- Every 6 months.
2- After 100 cumulative hours of use.
3- After 30 cumulative minutes of use.
4- After 1 cumulative hour of use.

059. Which statement is true concerning an Emergency Locator Transmitter (ELT) aboard an airplane?

C35
1- ELT battery replacement is required after each ten hours of cumulative use.
2- When activated, an ELT transmits on the frequencies 118.0 and 122.3 MHz.
3- An operable ELT is required on all training airplanes operated within 50 miles of the point of origin of the flight.
4- Tests of the equipment should be conducted during the first five minutes after every hour.

060. When activated, an Emergency Locator Transmitter (ELT) transmits simultaneously on which of the following frequencies?

C35
1- 118.0 and 118.8 MHz.
2- 121.5 and 243.0 MHz.
3- 123.0 and 119.0 MHz.
4- 122.3 and 122.8 MHz.

061. Unless each occupant is provided with supplemental oxygen, no person may operate a civil aircraft of U.S. registry above a cabin pressure altitude of

C22
1- 10,000 feet MSL.
2- 12,500 feet MSL.
3- 14,000 feet MSL.
4- 15,000 feet MSL.

062. When operating an aircraft at cabin pressure altitudes above 12,500 feet MSL up to and including 14,000 feet MSL, supplemental oxygen shall be used

C22
1- at no required time by a private pilot.
2- while at those altitudes for 15 minutes.
3- during the entire flight time at those altitudes.
4- while at those altitudes for more than 30 minutes.

063. An aircraft's operating limitations may be found

C21
1- only in the Owner's Handbook published by the aircraft manufacturer.
2- only in the FAA approved Airplane Flight Manual.
3- in the Airplane Flight Manual, approved manual material, markings, and placards, or any combination thereof.
4- on the Airworthiness Certificate.

064. During flight, which of these aircraft documents is required to be aboard?

C21
1- Weight and Balance Handbook.
2- Owner's Manual.
3- Aircraft and engine logbooks.
4- FAA approved and current aircraft flight manual or aircraft operating limitations.

065. Where can the operating limitations of an aircraft be found?

C21
1- In the Airplane Flight Manual, approved manual material, markings, and placards, or any combination thereof.
2- Only in the aircraft or engine logbooks.
3- On the Airworthiness Certificate.
4- Only in the Owner's Handbook published by the aircraft manufacturer.

066. Which record or document shall the owner or or operator of an airplane keep to show compliance with an applicable Airworthiness Directive?

C20
1- The aircraft Owner's Handbook.
2- The aircraft maintenance records.
3- The aircraft Airworthiness Certificate.
4- The aircraft Registration Certificate.

067. Who is responsible for determining whether an aircraft is in condition for safe flight?

C20
1- The pilot in command.
2- The owner of the aircraft.
3- The maintenance inspector.
4- The maintenance man who maintains the aircraft.

068. You check to determine that all required aircraft documents that must be carried in your aircraft are aboard. These include

C18
1- current Airworthiness Certificate, Owner's Manual, and aircraft and engine logbooks.
2- Registration Certificate, current Airworthiness Certificate, and Airplane Flight Manual or airplane operating limitations set forth in a manner acceptable to the Administrator.
3- aircraft and engine logbooks, current Airworthiness Certificate, and Airplane Flight Manual.
4- Registration Certificate, current Airworthiness Certificate, and aircraft and engine logbooks.

069. Choose those items that are required to be in the pilot's personal possession or aboard the aircraft during flight.

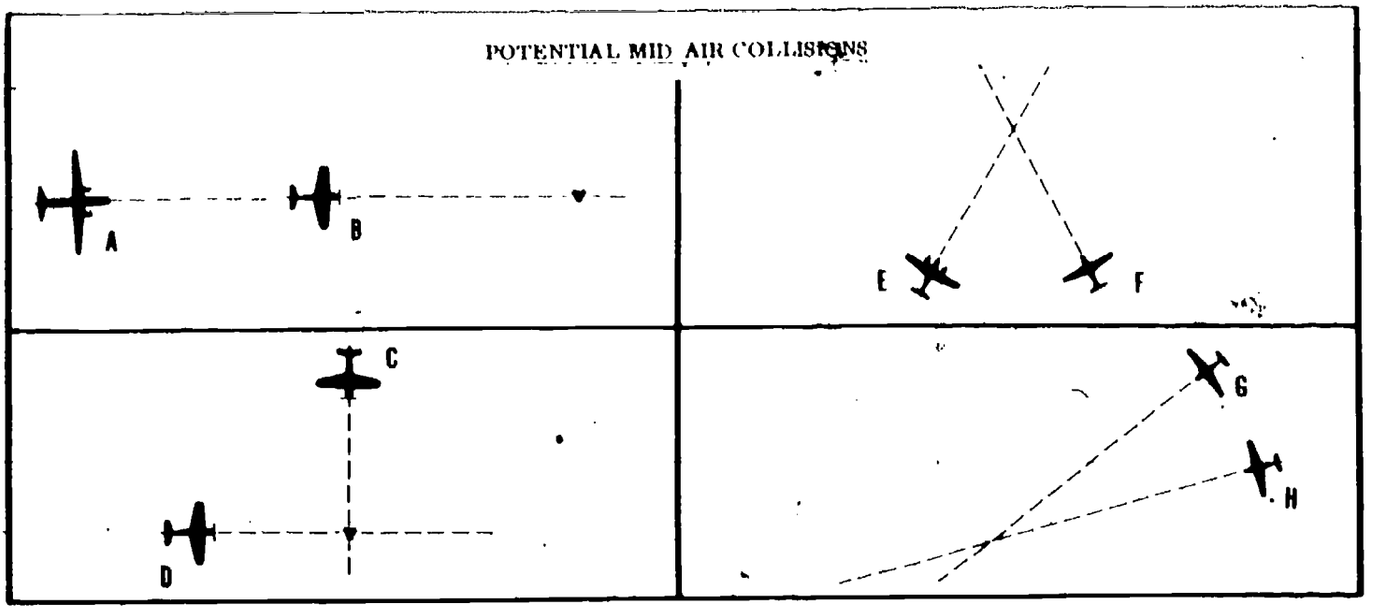
A. Aircraft and engine logbooks.
B. Airworthiness Certificate.
C. Registration Certificate.
D. Valid pilot certificate.
E. Valid medical certificate.

The required items are

C18
1- A, B, C, D, E.
2- A, B, C.
3- B, C, D, E.
4- A, D, E.

070. The Airworthiness Certificate of your airplane remains valid

C18
1- as long as the airplane is maintained and operated as required by Federal Aviation Regulations.
2- as long as the aircraft has not had major damage.
3- as long as the aircraft has a current Registration Certificate.
4- from the date of its issuance.



071. Airplanes "C" and "D" above are converging at the same altitude. Which statement is true?

D03
1- Airplane "C" should gain 500 feet and airplane "D" should lose 500 feet of altitude.
2- The airplane that is flying on an airway has the right-of-way.
3- Airplane "D" should alter course since airplane "C" is to its left.
4- Airplane "C" should alter course since airplane "D" is to its right.

072. Select the true statement concerning the proper action of airplanes depicted above.

D03
1- Airplane "H" should alter course since airplane "G" is to its right.
2- Airplane "F" should alter course since airplane "E" is to its left.
3- Airplane "D" should alter course since the pilot occupying the left seat has better vision than the pilot of airplane "C."
4- Airplane "B" should alter course to the left so the faster multiengine airplane "A" might pass.

073. Airplanes "E" and "F" above are converging at the same altitude. Which statement is true?

D03
1- Because airplane "F" is a single-engine airplane, it should give way to airplane "E."
2- Airplane "E" should give way to airplane "F."
3- Airplane "F" should give way to airplane "E."
4- Because airplane "E" is a multiengine airplane, it has the right-of-way.

074. When two or more airplanes are approaching an airport for the purpose of landing, the right-of-way belongs to the airplane

D03
1- at the lower altitude, but it shall not take advantage of this rule to cut in front of or to overtake another.
2- that is either ahead of or to the other's right regardless of altitude.
3- that is the least maneuverable.
4- that has the other to its right.

075. If airplanes "E" and "F" above were at the same altitude on converging courses, what action should be taken?

D03
1- Airplane "E" should give way to airplane "F."
2- Airplane "F" should give way to airplane "E."
3- Airplane "F" should give way because multiengine airplanes have the right-of-way over single-engine airplanes.
4- Airplane "E" should give way because single-engine airplanes have the right-of-way over multiengine airplanes.

076. Airplane "A" above is overtaking airplane "B," and both are at the same altitude. What action should be taken?

D03
1- Airplane "A" should descend on course and pass well below airplane "B."
2- Airplane "A" should alter course to the right and pass well clear of airplane "B."
3- Airplane "A" should alter course to the left and pass well clear of airplane "B."
4- Airplane "A" should climb on course and pass well above airplane "B."

077. Airplanes "G" and "H" (on the preceding page) are converging at the same altitude. Which statement is true?

D03
1- Airplane "H" should give way to airplane "G."
2- Airplane "G" should give way to airplane "H."
3- Airplane "H" should alter course to the right and airplane "G" should alter course to the left.
4- Because they are of the same category and type, neither airplane has the right-of-way.

078. A multiengine airplane is overtaking a single-engine airplane. Which airplane should give way, and in what manner?

D03
1- The multiengine airplane should give way by passing well to the right.
2- The single-engine airplane should give way by turning left.
3- The multiengine airplane should give way by descending and passing well to the left.
4- The airplane being overtaken should give way by turning right.

079. Approaching a VOR station while flying southwest at 8,500 feet MSL, you see a multiengine airplane at the same altitude converging from your left, headed northwest toward the VOR. According to regulations which pilot should give way and why?

D03
1- You should give way since your airplane is slower and more maneuverable than a multiengine airplane.
2- The pilot of the multiengine airplane should give way since the airplane is not flying at a proper VFR cruising altitude.
3- The multiengine airplane should give way since your airplane is to its right and you have the right-of-way.
4- You should give way since the other airplane is to your left and has the right-of-way.

080. Approaching a VORTAC while headed westward at 6,500 feet MSL, you see a multiengine airplane converging from your right; it is at the same altitude headed southwest. According to regulations, which pilot should give way and why?

D03
1- You should give way since your airplane is smaller, slower, and more maneuverable than the multiengine airplane.
2- The pilot of the multiengine airplane should give way since this airplane is not flying at a proper VFR cruising altitude.
3- The pilot of the multiengine airplane should give way since your airplane is to its left and you have the right-of-way.
4- You should give way since the other airplane is on your right and has the right-of-way.

081. When operating an aircraft equipped with a reciprocating engine within an Airport Traffic Area, the maximum indicated airspeed permitted is

D04
1- 109 knots (125 MPH).
2- 156 knots (180 MPH).
3- 200 knots (230 MPH).
4- 250 knots (288 MPH).

082. Unless otherwise authorized, no person may operate an aircraft below 10,000 feet MSL at an indicated airspeed of more than

D04
1- 156 knots (180 MPH).
2- 200 knots (230 MPH).
3- 250 knots (288 MPH).
4- 300 knots (345 MPH).

083. No person may operate an aircraft in acrobatic flight when the flight visibility is less than

D05
1- 3 miles.
2- 5 miles.
3- 7 miles.
4- 10 miles.

084. An aircraft should not be operated in acrobatic flight when

D05
1- the flight visibility is less than 5 miles.
2- below 3,000 feet AGL.
3- the flight visibility is less than 10 miles.
4- over any congested area.

085. Suppose that you had an in-flight emergency and found it necessary to deviate from previous ATC instructions, and then you were given landing priority at a controlled airport. If requested by ATC, a report must be submitted within 48 hours to the Chief of the

D07
1- appropriate Search and Rescue Unit.
2- Air Traffic Control facility.
3- nearest National Transportation Safety Board Field Office.
4- nearest General Aviation District Office.

086. A clearance to "taxi to" the active runway means a pilot has been given permission to taxi

D07
1- to the active runway and to take off.
2- via taxiways and across intersecting runways to, but not on, the active runway.
3- to and hold in takeoff position on the active runway.
4- on taxiways to the active runway without crossing any intersecting runways.

087. Select the correct terminology of instructions you would normally receive from the control tower, if you were cleared to taxi onto the active runway but not cleared for takeoff.

D07
1- "Taxi into position and hold."
2- "State when ready for takeoff."
3- "Departure clearance has not been issued."
4- "You are cleared to hold."

088. Ground Control issues the following taxi instructions:

". . .CLEARED TO RUNWAY TWO ONE, WIND TWO ZERO ZERO AT ONE SIX, ALTIMETER TWO NINER EIGHT SEVEN, TIME ONE ONE FOUR THREE, TAXI NORTH ON THE RAMP. . ."

From these instructions, you are cleared to taxi to

D07
1- and line up on Runway 21 and may take off unless instructed to hold by the tower.
2- the north end of the ramp only.
3- the runup area for Runway 21 only.
4- and line up on Runway 21, but must receive permission for takeoff.

089. As you prepare to taxi out for takeoff, you receive the following clearance:

"BIRDCRAFT CLEARED TO RUNWAY 3. TAXI SOUTHWEST ON THE RAMP. . ."

Select the true statement which describes the action you should take.

D07
1- Taxi to Runway 3, cross runways that intersect the taxi route but hold clear of active Runway 3.
2- Taxi on the ramp but hold clear of any runway that intersects a taxiway.
3- Taxi to Runway 3 and hold in position on the runway until the tower clears you for takeoff.
4- Wait for further clearance before leaving the ramp.

090. Aircraft operating at night, in the air or on the surface, must display lighted position lights during the period from

D06
1- 1 hour before sunset to 1 hour after sunrise.
2- sunset to sunrise.
3- 30 minutes after sunset to 30 minutes after sunrise.
4- 30 minutes before sunset to 30 minutes after sunrise.

091. To comply with Federal Aviation Regulations (FARs), aircraft operating in the air or on the surface must display lighted position lights during the period from

D06
1- sunset to sunrise.
2- 30 minutes after sunset to 30 minutes after sunrise.
3- 30 minutes before sunset to 30 minutes after sunrise.
4- 1 hour before sunset to 1 hour after sunrise.

092. When an aircraft is being operated at night, it must display lighted position lights during the period from

D06
1- 1 hour before sunset to 1 hour after sunrise.
2- 30 minutes after sunset to 30 minutes after sunrise.
3- 30 minutes before sunset to 30 minutes after sunrise.
4- sunset to sunrise.

093. Which statement is true regarding acrobatic flight?

D05
1- Acrobatic flight should not be performed when supplemental oxygen equipment is aboard.
2- Parachutes are always required for all occupants of an aircraft when spins are practiced.
3- The visibility must be at least 5 miles and the ceiling must be at least 3,000 feet when performing acrobatic flight.
4- Any intentional maneuver involving an abrupt change in attitude not necessary for normal flight is considered acrobatic flight.

094. When acrobatic flight is to be performed, the flight visibility must be at least

D05
1- 3 miles.
2- 5 miles.
3- 7 miles.
4- 10 miles.

095. Acrobatic flight should not be performed when

D05
1- flight visibility is less than 7 miles.
2- the sky is overcast.
3- below 2,000 feet AGL.
4- within a federal airway.

096. According to Federal Aviation Regulations, which of the following are true statements?

A. Parachutes are required when a private pilot carrying a passenger executes an intentional maneuver that exceeds a 30° noseup attitude relative to the horizon.
B. All acrobatic maneuvers must be completed at least 2,000 feet above the surface.
C. Parachutes are always required for all occupants of an aircraft when spins are practiced.
D. An intentional maneuver, not necessary for normal flight, involving an abrupt change in the aircraft's attitude is considered acrobatic flight.

The true statements are:

D05
1- A, B, C, D.
2- A, D.
3- B, C, D.
4- A, B, C.

097. An aircraft should not be operated in acrobatic flight when

D05
1- supplemental oxygen equipment is aboard.
2- flight visibility is less than 10 miles.
3- below 3,000 feet AGL.
4- within a control zone.

098. Acrobatic flight should not be performed unless

D05
1- a normal category airplane is used.
2- an instructor is aboard.
3- the flight visibility is at least 5 miles.
4- the aircraft is more than 1,500 feet AGL.

099. No person may operate an aircraft in acrobatic flight when

D05
1- below 2,000 feet AGL.
2- the flight visibility is less than 5 miles.
3- the flight visibility is less than 7 miles.
4- over an open air assembly of people.

100. According to regulations, which statement is true regarding acrobatic flight or the use of parachutes?

D05
1- An intentional maneuver, not necessary for normal flight involving an abrupt change in the aircraft's attitude, is considered acrobatic flight.
2- Parachutes are not required when a private pilot carrying a passenger performs a power-on stall in a noseup attitude of 40° relative to the horizon.
3- For acrobatic flight, the visibility must be at least 5 miles and the ceiling must be 3,000 feet or more.
4- Parachutes are always required for all occupants of an aircraft when spins are practiced.

101. In regard to the correct traffic pattern departure procedure to use at a noncontrolled airport, which statement is true?

D14
1- Depart as prearranged with other pilots using the airport.
2- Comply with any FAA traffic pattern established for the airport.
3- Make all turns to the left.
4- Depart in any direction consistent with safety, after crossing the airport boundary.

102. Unless otherwise authorized, two-way radio communications with ATC are required for landings or takeoffs

D13
1- at tower controlled airports within control zones only when weather conditions are less than VFR.
2- at all tower controlled airports only when weather conditions are less than VFR.
3- at all tower controlled airports regardless of the weather conditions.
4- within control zones regardless of the weather conditions.

103. Closing a VFR flight plan at the completion of a flight is

D11
1- accomplished by any government agency through teletype service.
2- advisable, but is not required by regulations.
3- required by regulations.
4- automatically accomplished by the control tower or FSS personnel when the aircraft lands at its destination.

104. When flying below 18,000 feet MSL in an aircraft without radio equipment, cruising altitude must be maintained by reference to an altimeter that was

D10
1- periodically reset to the elevations of enroute airports.
2- set to zero elevation prior to takeoff.
3- adjusted to 29.92" Hg.
4- set to the elevation of the departure airport.

105. To maintain the proper cruising altitude, if your airplane is not equipped with a radio, the altimeter should be set to

D10
1- the elevation of the airport of departure, or appropriate altimeter settings available prior to departure.
2- the density altitude at the airport of departure.
3- 29.92" Hg at the airport of departure and whenever below 18,000 feet MSL.
4- zero.

106. Over sparsely populated areas an aircraft may not be operated, except when necessary for takeoff or landing, closer than what distance from any person, vehicle, or structure?

D09
1- 100 feet.
2- 500 feet.
3- 1,000 feet.
4- 2,000 feet.

107. Except when necessary for takeoff or landing, to operate an airplane over a congested area of a city, the minimum altitude for flight directly above the highest obstacle is

D09
1- 500 feet.
2- 1,000 feet.
3- 1,500 feet.
4- 3,000 feet.

108. The minimum safe altitude required for flights over any congested area of a city, town, or settlement is 1,000 feet above the highest obstacle within a horizontal radius of

D09
1- 1,000 feet from the aircraft.
2- 1,500 feet from the aircraft.
3- 2,000 feet from the aircraft.
4- 3,000 feet from the aircraft.

109. To operate an aircraft over any congested area, a pilot should maintain an altitude of at least

D09
1- 2,000 feet above the highest obstacle within a horizontal radius of 1,000 feet.
2- 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet.
3- 500 feet above the highest obstacle within a horizontal radius of 1,000 feet.
4- 500 feet above the highest obstacle within a horizontal radius of 500 feet.

110. A "flashing green" ATC light signal directed to an aircraft on the surface is a signal that the pilot

D08
1- should stop taxiing.
2- should taxi clear of the runway in use.
3- should exercise extreme caution.
4- is cleared to taxi.

111. An "alternating red and green" ATC light signal directed to an aircraft in flight is a signal to the pilot of that aircraft to

D08
1- give way to other aircraft and continue circling.
2- abort the landing.
3- return for landing.
4- exercise extreme caution.

112. A "steady red" ATC light signal directed to an aircraft on the surface is a signal to the pilot of that aircraft to

D08
1- return to the starting point on the airport.
2- taxi clear of the runway in use.
3- exercise extreme caution.
4- stop taxiing.

113. A "steady red" ATC light signal directed to an aircraft in flight is a signal to the pilot of that aircraft to

D08
1- give way to other aircraft and continue circling.
2- abort the landing.
3- exercise extreme caution.
4- return for landing.

114. Suppose that you receive a flashing white light from a control tower during the run-up prior to takeoff; what action should you take?

D08
1- None, since this light signal is applicable only to aircraft in flight.
2- Return to your starting point on the airport.
3- Taxi clear of the runway in use.
4- Proceed, exercising extreme caution.

115. If you receive an alternating red and green light from a control tower during final approach for landing, what action should you take?

D08
1- You would not land, the airport is unsafe.
2- Give way to other aircraft and continue circling.
3- Exercise extreme caution.
4- No action since this light is not applicable to aircraft in flight.

116. A "steady green" ATC light signal directed to an aircraft in flight is a signal that the pilot

D08
1- should exercise extreme caution.
2- should return for landing.
3- should give way to other aircraft and continue circling.
4- is cleared to land.

117. A "flashing green" ATC light signal directed to an aircraft in flight is a signal to the pilot of that aircraft to

D08
1- abort the landing.
2- give way to other aircraft and continue circling.
3- exercise extreme caution.
4- return for landing.

118. A "steady green" ATC light signal directed to an aircraft on the surface is a signal that the pilot

D08
1- should stop taxiing.
2- should return to the starting point on the airport.
3- should exercise extreme caution.
4- is cleared to take off.

119. If you are on the final approach for landing and notice a flashing red light directed at you from the control tower, what action should you take?

D08
1- Continue to the airport and land because this signal applies only to airplanes taxiing on the surface.
2- You should give way because there is another aircraft on final approach.
3- You should not land because the airport is unsafe for landing.
4- Continue to the airport and land, exercising extreme caution.

120. During VFR operations outside controlled airspace at altitudes of less than 1,200 feet AGL, the minimum flight visibility requirement when operating airplanes is

D25
1- 1 statute mile.
2- 3 statute miles.
3- 5 statute miles.
4- not specified by regulations.

121. During operations outside controlled airspace at altitudes of more than 1,200 feet AGL, but less than 10,000 feet MSL, the minimum "horizontal distance from clouds" requirement for VFR flight is

D25
1- 500 feet.
2- 1,000 feet.
3- 1,500 feet.
4- 2,000 feet.

122. To conduct a VFR flight in controlled airspace, at an altitude that is less than 10,000 feet MSL, you should have at least

D25
1- 3 miles visibility and remain at least 1,000 feet below or 500 feet above and 1 mile horizontally from all clouds.
2- 1 mile visibility and remain "clear of clouds."
3- 3 miles visibility and remain at least 500 feet below or 1,000 feet above and 2,000 feet horizontally from all clouds.
4- 1 mile visibility and remain at least 500 feet below or 1,000 feet above and 2,000 feet horizontally from all clouds.

123. According to Federal Aviation Regulations, VFR flight above 1,200 feet AGL and below 10,000 feet MSL requires a minimum visibility and vertical cloud clearance of

D25
1- 3 miles, and 1,000 feet below or 2,000 feet above the clouds at all altitudes within and outside of controlled airspace.
2- 5 miles, and 1,000 feet below or 1,000 feet above the clouds only in the Continental Control Area.
3- 5 miles, and 1,000 feet below or 1,000 feet above the clouds at all altitudes.
4- 3 miles, and 500 feet below or 1,000 feet above the clouds in controlled airspace.

124. During operations at altitudes of more than 1,200 feet above the surface and at or above 10,000 feet MSL, the minimum "horizontal distance from clouds" requirement for VFR flight is

D25
1- 1,000 feet.
2- 2,000 feet.
3- 1/2 mile.
4- 1 mile.

125. The basic VFR weather minimums for operating an airplane within a control zone are

D25
1- 2,000-foot ceiling and 1 mile visibility.
2- clear of clouds and 2 miles visibility.
3- 1,000-foot ceiling and 3 miles visibility.
4- 500-foot ceiling and 1 mile visibility.

126. During operations within controlled airspace at altitudes of less than 1,200 feet AGL, the minimum "horizontal distance from clouds" requirement for VFR flight is

D25
1- 500 feet.
2- 1,000 feet.
3- 1,500 feet.
4- 2,000 feet.

127. VFR flight above 1,200 feet AGL and below 10,000 feet MSL requires a minimum visibility and vertical cloud clearance of

D25
1- 5 miles, and 1,000 feet below or 1,000 feet above the clouds only within the Continental Control Area.
2- 5 miles, and 1,000 feet below or 1,000 feet above the clouds at all altitudes.
3- 3 miles, and 500 feet below or 1,000 feet above the clouds within controlled airspace.
4- 3 miles, and 1,000 feet below or 2,000 feet above the clouds at all altitudes within and outside of controlled airspace.

128. The minimum ceiling and visibility to operate an airplane VFR in a control zone are

D25
1- 500 feet and 1 mile.
2- 1,000 feet and 3 miles.
3- 1,400 feet and 2 miles.
4- 2,000 feet and 3 miles.

129. During operations at altitudes of more than 1,200 feet AGL and at or above 10,000 feet MSL, the minimum "distance below clouds" requirement for VFR flight is

D25
1- 500 feet.
2- 1,000 feet.
3- 1,500 feet.
4- 2,000 feet.

130. During VFR operations at altitudes of more than 1,200 feet AGL and at or above 10,000 feet MSL, the minimum flight visibility requirement is

D25
1- 1 statute mile.
2- 3 statute miles.
3- 5 statute miles.
4- 7 statute miles.

131. During operations within controlled airspace at altitudes of more than 1,200 feet AGL, but less than 10,000 feet MSL, the minimum "horizontal distance from clouds" requirement for VFR flight is

D25
1- 500 feet.
2- 1,000 feet.
3- 1,500 feet.
4- 2,000 feet.

132. With regard to operating within a Group I Terminal Control Area (TCA), which of the following statements is true?

D15
1- The pilot must be instrument rated and file an IFR flight plan.
2- The airplane must have an operable VOR receiver, two-way communications radio, and a radar beacon transponder.
3- Private pilots are not permitted to fly within the TCA.
4- All of the above statements are true.

133. Regarding operations within a Group I Terminal Control Area (TCA), which of the following statements is true?

D15
1- An IFR flight plan must be filed to fly within a Group I TCA.
2- The aircraft must have an operable VOR receiver, two-way communications radio, and a radar beacon transponder.
3- Private pilots are not permitted to fly within a Group
4- The pilot must have an instrument rating.

134. Which of the following statements are true regarding the requirements for operating within a Group I Terminal Control Area (TCA)?

A. The pilot must hold at least a Commercial Pilot Certificate.
B. Authorization from ATC is required prior to operating in the area.
C. The pilot must be instrument rated and he must be operating on an instrument flight plan.
D. The airplane must have an operable VOR receiver, two-way communications radio, and a radar beacon transponder.
E. The pilot in command must hold at least a Private Pilot Certificate to take off or land within the TCA.

The true statements are:

D15
1- A, C, D.
2- C, D, E.
3- B, D, E.
4- A, B, C, D.

135. Which statement is true regarding the requirements for flight within a Group I Terminal Control Area (TCA)?

D15
1- The pilot in command must be instrument rated.
2- The pilot in command must hold at least a Private Pilot Certificate to land or take off in a Group I TCA.
3- An operable ADF receiver is required aboard the aircraft.
4- The aircraft must be equipped with operable Distance Measuring Equipment.

136. With regard to operating within a Group I Terminal Control Area (TCA), which of the following statements is true?

D15
1- The airplane must have an operable VOR receiver, two-way communications radio, and a radar beacon transponder.
2- The pilot must be instrument rated and file an IFR flight plan.
3- Private pilots are not permitted to fly within the TCA.
4- All of the above statements are true.

137. Which of the following courses and altitudes are appropriate for VFR aircraft operating more than 3,000 feet AGL, but below 18,000 feet MSL?

D27
1- Magnetic course 0° - 179° inclusive, even thousands plus 500 feet.
2- True course 180° - 359° inclusive, odd thousands plus 500 feet.
3- True course 0° - 179° inclusive, odd thousands plus 500 feet.
4- Magnetic course 180° - 359° inclusive, even thousands plus 500 feet.

138. To comply with regulations, the selection of VFR cruising altitudes should be made on the basis of the magnetic

D27
1- heading when more than 3,000 feet above the surface.
2- heading when more than 3,000 feet above sea level.
3- course when more than 3,000 feet above the surface.
4- course when more than 3,000 feet above sea level.

139. To operate an airplane within a control zone at night under special VFR, the pilot is required to

D26
1- remain 500 feet below the clouds.
2- have logged more than 500 hours' first pilot time.
3- have an instructor aboard.
4- be instrument rated.

140. When operating an airplane within a control zone under special VFR, the flight visibility should be at least

D26
1- 1 statute mile.
2- 3 statute miles.
3- 5 statute miles.
4- 7 statute miles.

141. No person may operate an aircraft in a control zone under special VFR unless

D26
1- on an instrument flight plan.
2- flight visibility is at least 3 miles.
3- that person is instrument rated.
4- clear of clouds.

142. A special VFR clearance authorizes the pilot of an airplane to operate VFR while within a control zone

D26
1- at or below cloud base with a flight visibility of 1 mile or less, provided he remains below 1,000 feet above the surface.
2- with no minimum visibility requirements if clear of the clouds.
3- if clear of clouds and the visibility is at least 1 mile.
4- when the ceiling is less than 1,000 feet and visibility less than 1 mile if he does not exceed maneuvering speed.

143. No person may operate an airplane within a control zone at night under special VFR unless

D26
1- the flight visibility is at least 3 miles.
2- the airplane is equipped for instrument flight.
3- an instructor is aboard.
4- the flight can be conducted 500 feet below the clouds.

144. A special VFR clearance applies to what kind of controlled airspace?

D26
1- Transition Area.
2- Control Area.
3- Control Zone.
4- Airport Traffic Area.

145. During operations outside controlled airspace at altitudes of more than 1,200 feet AGL, but less than 10,000 feet MSL, the minimum "distance above clouds" requirement for VFR flight is

D25
1- 500 feet.
2- 1,000 feet.
3- 1,500 feet.
4- 2,000 feet.

146. Outside controlled airspace, the minimum flight visibility requirement for VFR flight above 1,200 feet AGL and below 10,000 feet MSL is

D25
1- 1 mile.
2- 3 miles.
3- 5 miles.
4- 7 miles.

147. The basic VFR weather minimums for flights within controlled airspace below 10,000 feet MSL require the minimum visibility and distance under the clouds to be

D25
1- 3 miles and 500 feet.
2- 1 mile and 500 feet.
3- 1 mile and clear of clouds.
4- 3 miles and 1,000 feet.

148. During operations at altitudes of more than 1,200 feet AGL and at or above 10,000 feet MSL, the minimum "distance above clouds" requirement for VFR flight is

D25
1- 500 feet.
2- 1,000 feet.
3- 1,500 feet.
4- 2,000 feet.

149. During operations within controlled airspace at altitudes of less than 1,200 feet AGL, the minimum "distance above clouds" requirement for VFR flight is

D25
1- 500 feet.
2- 1,000 feet.
3- 1,500 feet.
4- 2,000 feet.

150. During operations within controlled airspace at altitudes of more than 1,200 feet AGL, but less than 10,000 feet MSL, the minimum "distance above clouds" requirement for VFR flight is

D25
1- 500 feet.
2- 1,000 feet.
3- 1,500 feet.
4- 2,000 feet.

151. During operations outside controlled airspace at altitudes of more than 1,200 feet AGL, but less than 10,000 feet MSL, the minimum "distance below clouds" requirement for VFR flight is

D25
1- 500 feet.
2- 1,000 feet.
3- 1,500 feet.
4- 2,000 feet.

152. During operations within controlled airspace at altitudes of less than 1,200 feet AGL, the minimum "distance below clouds" requirement for VFR flight is

D25
1- 500 feet.
2- 1,000 feet.
3- 1,500 feet.
4- 2,000 feet.

153. During operations within controlled airspace at altitudes of more than 1,200 feet AGL, but less than 10,000 feet MSL, the minimum "distance below clouds" requirement for VFR flight is

D25
1- 500 feet.
2- 1,000 feet.
3- 1,500 feet.
4- 2,000 feet.

154. Within controlled airspace, the minimum flight visibility requirement for VFR flight above 1,200 feet AGL and below 10,000 feet MSL is

D25
1- 3 miles.
2- 5 miles.
3- 7 miles.
4- 10 miles.

155. During VFR operations outside controlled airspace at altitudes of less than 1,200 feet AGL, what is the minimum "distance from clouds" requirement?

D25
1- 1,000 feet above, 1,000 feet below, 1,500 feet horizontal.
2- 500 feet above, 500 feet below, 1,000 feet horizontal.
3- 500 feet above, 1,000 feet below, 2,000 feet horizontal.
4- clear of clouds.

156. To operate an airplane VFR ourside controlled airspace, at more than 1,200 feet above the surface but less than 10,000 feet MSL, the minimum distance below or above the clouds is

D25
1- 500 feet below or 500 feet above the clouds.
2- 500 feet below or 1,000 feet above the clouds.
3- not specified by regulations.
4- 1,000 feet below or 500 feet above the clouds.

157. During VFR operations within controlled airspace at altitudes of less than 1,200 feet AGL, the minimum flight visibility requirement is

D25
1- 1 statute mile.
2- 3 statute miles.
3- 5 statute miles.
4- 7 statute miles.

158. You can determine if an aircraft has had an annual inspection and has been returned to service by referring to the

E04
1- issuance date of the Airworthiness Certificate.
2- appropriate notation in the aircraft maintenance records.
3- relicensing date on the Airworthiness Certificate.
4- appropriate notation on a Repair and Alteration Form.

159. An aircraft's last annual inspection was performed on July 13, 1978. The next annual inspection will be due no later than

E04
1- July 31, 1979.
2- July 13, 1979.
3- 100 flight hours following the last annual inspection.
4- 12 calendar months after the date shown on the Airworthiness Certificate.

160. To determine the expiration date of the last annual aircraft inspection, you should refer to the

E04
1- Owner-Operator Manual.
2- aircraft maintenance records.
3- Registration Certificate.
4- Airworthiness Certificate.

161. If an alteration or repair may have appreciably changed an airplane's flight characteristics, the airplane must be test flown and approved for return to service by an appropriately-rated pilot prior to being operated

E03
1- away from the vicinity of the airport.
2- by anyone who is not at least a commercial pilot.
3- with passengers aboard.
4- for compensation or hire.

162. If an alteration or repair substantially affects an airplane's operation in flight, the airplane must be test flown by an appropriately-rated pilot and approved for return to service prior to being operated

E03
1- for compensation or hire.
2- by any private pilot.
3- with passengers aboard.
4- away from the vicinity of the airport.

163. If an alteration or repair was made that appreciably changed an airplane's flight characteristics, prior to returning the airplane to service, it must be test flown by an appropriately-rated pilot who possesses at least a

E03
1- Commercial Pilot Certificate and a Flight Instructor Airplane Certificate.
2- Student Pilot Certificate and an FAA Mechanics Certificate.
3- Private Pilot Certificate.
4- Commercial Pilot Certificate.

164. After aircraft inspections have been made and defects repaired, who is responsible to ensure that maintenance personnel make appropriate entries in the aircraft and maintenance records indicating that an aircraft has been released to service?

E02
1- Pilot in command of the aircraft.
2- Owner or operator of the aircraft.
3- FAA certificated repair station.
4- FAA certificated mechanic with inspection authorization.

165. Completion of an annual inspection and the return of an aircraft to service should always be indicated by

E02
1- the issuance date of the Airworthiness Certificate.
2- the results of the inspection described on a Repair and Alteration Form.
3- an appropriate notation in the aircraft maintenance records.
4- the relicensing date on the Registration Certificate.

166. After maintenance has been performed on an aircraft, who is responsible for ensuring that appropriate entries have been made in the aircraft maintenance records indicating the aircraft has been released to service?

E02
1- The owner or operator of the aircraft.
2- The pilot in command of the aircraft.
3- The approved repair station that performed the maintenance.
4- The airframe and powerplant mechanic who performed the maintenance.

167. The responsibility for ensuring that an aircraft is maintained in an airworthy condition is primarily that of the

E01
1- certified mechanic who signs the aircraft maintenance records.
2- maintenance shop.
3- owner or operator of the aircraft.
4- pilot in command of the aircraft.

168. Who is primarily responsible for ensuring that an aircraft is maintained in an airworthy condition?

E01
1- The mechanic who signs the aircraft maintenance records.
2- The nearest FAA General Aviation District Office.
3- The owner or operator of the aircraft.
4- The pilot in command.

169. You are cruising VFR on a magnetic heading of 174° and making good a magnetic course of 185°--and wish to maintain an altitude of more than 3,000 feet above the surface, but less than 18,000 feet MSL. Of the following altitudes listed, which would be appropriate in this situation?

D27
1- 5,500 feet MSL.
2- 6,000 feet MSL.
3- 6,500 feet MSL.
4- 7,000 feet MSL.

170. Appropriate VFR cruising altitudes should be maintained when operating in level cruising flight during

D27
1- all special VFR operations.
2- all VFR operations in controlled airspace above 2,000 feet above the ground.
3- VFR operations at more than 3,000 feet above ground level.
4- all VFR operations in uncontrolled airspace above 2,000 feet above the ground.

171. Inside and outside controlled airspace, adherence to the regulation which specifies altitude appropriate for the direction of VFR flight is

D27
1- required only if pilot has filed a VFR flight plan.
2- required only if visibility is less than 3 miles.
3- required above 3,000 feet AGL.
4- not required at any altitude.

172. When operating an aircraft under VFR in level cruising flight at an altitude of more than 3,000 feet above the surface you should maintain an appropriate

D27
1- MSL altitude based on magnetic heading.
2- AGL altitude based on true heading.
3- MSL altitude based on magnetic course.
4- AGL altitude based on true course.

173. Each person operating an aircraft under VFR in level cruising flight at an altitude of more than 3,000 feet above the surface, and below 18,000 feet MSL, shall maintain an odd-thousand-plus 500-foot altitude while on a

D27
1- true heading of 0° through 179°.
2- true course of 180° through 359°.
3- magnetic course of 0° through 179°.
4- magnetic heading of 180° through 359°.

174. The selection of VFR cruising altitudes should be made on the basis of the magnetic

D27
1- heading when more than 3,000 feet above the surface.
2- heading when more than 3,000 feet above sea level.
3- course when more than 3,000 feet above sea level.
4- course when more than 3,000 feet above the surface.

175. The selection of altitudes for VFR cross-country flights at more than 3,000 feet above the surface is based on the

D27
1- compass heading.
2- true heading.
3- magnetic course.
4- true course.

176. The Federal Aviation Administration issues Advisory Circulars that provide a systematic means for the issuance of nonregulatory material of interest to the aviation public. They are issued

I01
1- as amendments to the National Transportation Safety Board regulation, Part 830.
2- by automatic distribution to subscribers of the Airman's Information Manual.
3- on a regularly scheduled basis, but must be purchased by the aviation public.
4- in a numbered system of general subject matter areas to correspond with the subject areas in Federal Aviation Regulations.

177. Advisory Circulars are issued by the Federal Aviation Administration to inform the aviation public of

I01
1- proposed rulemaking.
2- nonregulatory material of interest.
3- projects in the planning stage.
4- the location of FAA General Aviation District Offices (GADOs).

178. Of the following incidents, which would necessitate an immediate notification to the nearest National Transportation Safety Board Field Office?

H03
1- Ground damage to the propeller blades.
2- An in-flight loss of VOR receiver capability.
3- An in-flight fire.
4- An in-flight generator/alternator failure.

179. Certain incidents require immediate notification to the nearest National Transportation Safety Board Field Office. Which of the following incidents would require this action?

H03
1- Substantial aircraft ground fire with no intention of flight.
2- Inability of any required crewmember to perform normal flight duties due to in-flight injury or illness.
3- Landing gear damage, due to a hard landing.
4- A forced landing due to engine failure.

180. Suppose an aircraft is involved in an accident that results in substantial damage to the aircraft, but no injuries to the occupants. When must the pilot or operator of the aircraft notify the nearest National Transportation Safety Board Field Office of the occurrence?

H03
1- Within 10 days.
2- Within 48 hours.
3- Immediately.
4- Within 1 week.

181. Of the following incidents, which would require an immediate notification to the nearest National Transportation Safety Board Field Office?

H03
1- Minor damage to an aircraft with no intention of flight, sustained during ground operations with the engine functioning.
2- Damage to a landing gear as a result of a hard landing.
3- An in-flight generator failure.
4- Flight control system malfunction or failure.

182. Which of these incidents would require that an immediate notification be made to the nearest National Transportation Safety Board Field Office?

H03
1- In-flight hail damage.
2- An in-flight generator or alternator failure.
3- An in-flight radio (communication) failure.
4- An overdue aircraft that is believed to be involved in an accident.

183. Certain rules contained in the National Transportation Safety Board regulation, Part 830, pertain to

H01
1- the notification and reporting of aircraft accidents, incidents, and overdue aircraft.
2- the development of national transportation policies and programs conducive to the provisions of safe, efficient, and convenient transportation at the lowest possible cost.
3- Air Traffic Control procedures for operations within controlled airspace.
4- basic fundamental data essential to safety of flight in the U.S. National Airspace System.

184. Notification requirements pertaining to aircraft accidents, incidents, and overdue aircraft are covered in

H01
1- Department of Transportation Regulations, Part 300, Emergency Procedures.
2- National Transportation Safety Board regulation, Part 830.
3- Federal Aviation Regulations, Part 91, General Operating and Flight Rules.
4- Federal Aviation Regulations, Part 13, Enforcement Procedures.

185. After an annual inspection has been completed and the aircraft has been returned to service, an appropriate notation should be made on the

E06
1- aircraft maintenance records.
2- Repair and Alteration Form or operating placards.
3- Airworthiness Certificate.
4- instrument panel inspection sticker.

186. Completion of an annual inspection and the return of the aircraft to service should always be indicated by

E06
1- the issuance date of the Airworthiness Certificate.
2- an inspection sticker placed on the instrument panel that lists the annual inspection completion date.
3- an appropriate notation in the aircraft maintenance records.
4- the relicensing date on the Registration Certificate.

187. An aircraft's last annual inspection was performed on August 10, 1978. The next annual inspection will be due no later than

E04
1- 12 calendar months after the date shown on the Airworthiness Certificate.
2- August 31, 1980.
3- August 10, 1979.
4- August 31, 1979.

188. An aircraft shall not be flown unless it has been given an "annual inspection"

E04
1- within the preceding 100 hours of logged flight time.
2- within the preceding 12 calendar months.
3- upon change of ownership.
4- within the preceding 365 days, only if it is flown for hire.

189. The records of the airplane you plan to fly show that the last annual inspection was performed on November 15, 1978. The next annual inspection will be due no later than

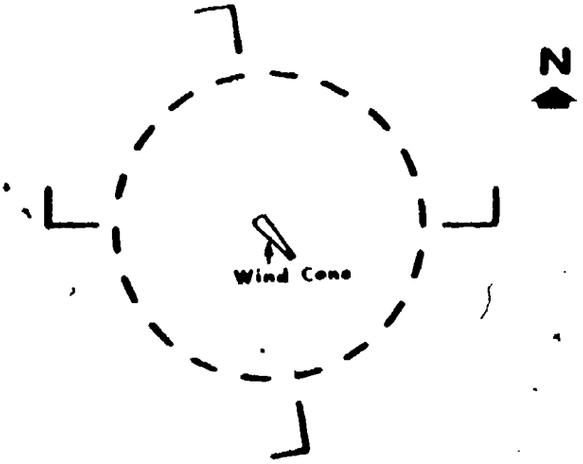
E04
1- 100 hours of flying time following the last annual inspection.
2- October 31, 1979.
3- 12 calendar months after the date shown on the Airworthiness Certificate.
4- November 30, 1979.

190. How long does the Airworthiness Certificate of your airplane remain valid?

E04
1- Indefinitely, unless the prescribed operating limitations are exceeded.
2- As long as the airplane is maintained and operated as required by Federal Aviation Regulations.
3- Indefinitely, unless the aircraft suffers major damage.
4- As long as the aircraft has a current Registration Certificate.

191. The last annual inspection was performed on your aircraft December 1, 1978. The next annual inspection will be due no later than

E04
1- December 31, 1979.
2- 100 flight hours following the last annual inspection.
3- 12 calendar months after the date shown on the Airworthiness Certificate.
4- December 1, 1979.



192. The segmented circle shown above indicates that the airport traffic is

J02
1- left-hand for Runway 17 and right-hand for Runway 35.
2- right-hand for Runway 9 and left-hand for Runway 27.
3- right-hand for Runway 35 and right-hand for Runway 9.
4- left-hand for Runway 35 and right-hand for Runway 17.

193. While flying enroute, you observe an airport with a segmented circle adjacent to the runway as depicted above. This marking indicates that airport traffic is

J02
1- left-hand for Runway 17 and right-hand for Runway 35.
2- left-hand for Runway 35 and left-hand for Runway 17.
3- left-hand for Runway 9 and right-hand for Runway 27.
4- left-hand for Runway 27 and left-hand for Runway 9.

195. Which one of the following statements is true concerning the segmented circle depicted to the left?

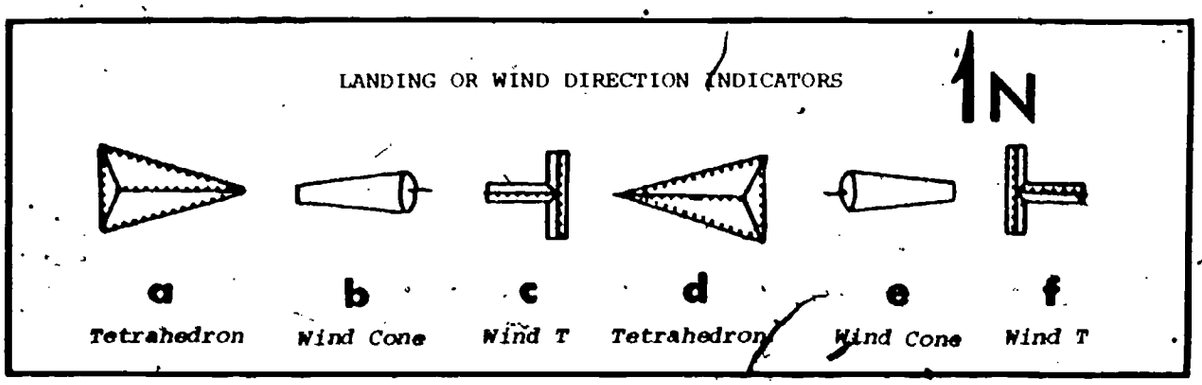
J02
1- After takeoff on Runway 35 you would be correct in turning to the right.
2- A landing on Runway 27 would be with a right-quartering headwind.
3- A landing on Runway 35 would be with a right-quartering headwind.
4- The runways most aligned with the wind direction indicator are Ruhways 9 and 17.

196. Assume you observe a segmented circle adjacent to an airport runway as shown above left. The markings indicate that

J02
1- you should turn left after takeoff on Runway 35.
2- you should circle the airport to the left prior to landing on any runway.
3- you would have a left-quartering tailwind if you landed on Runway 35.
4- airport traffic is left-hand for Runway 17 and Runway 27.

197. A segmented circle as shown above left indicates that

J02
1- you would have a right-quartering headwind if you landed on Runway 9.
2- airport traffic is right-hand for Runway 27 and Runway 35.
3- airport traffic is left-hand for Runway 35 and right-hand for Runway 27.
4- you should circle the airport to the right prior to landing on any runway.



194. Which indicators depicted above show that landings should be made to the east?

J02
1- d, e, f.
2- a, b, c.
3- a, e, f.
4- c, d, f.

198. Assume that one of the landing or wind direction indicators depicted above is observed adjacent to the landing strip. Which indicators show that the landing should be made to the west?

J02
1- d, e, f.
2- a, e, f.
3- a, b, c.
4- b, c, d.

199. The FAA established a system for the publication of nonregulatory guidance and informational material to the public. These publications are known as

101 1- Advisory Circulars.
2- Airworthiness Directives (ADs).
3- Technical Standard Orders (TSOs).
4- Airman's Guide.

200. FAA Advisory Circulars are issued for the purpose of

101 1- providing the public the proper procedures for the notification and reporting of aircraft accidents.
2- informing the public of the list of FAA General Aviation District Offices (GADOs).
3- informing the public of nonregulatory material of interest.
4- providing study material covering the Federal Aviation Regulations.

201. Advisory Circulars are issued by the Federal Aviation Administration to inform the aviation public of

101 1- nonregulatory material of interest.
2- projects in the planning stage.
3- regulatory material of interest.
4- proposed rulemaking.

202. The Federal Aviation Administration issues Advisory Circulars that

101 1- provide the aviation public with aircraft Airworthiness Directives.
2- provide a systematic means for the issuance of regulatory material for commercial pilots only.
3- provide a systematic means for the issuance of nonregulatory material.
4- are not arranged with the subject matter corresponding to the subject areas in Federal Aviation Regulations.

203. During daylight hours, the operation of a rotating beacon at an airport located within a control zone means

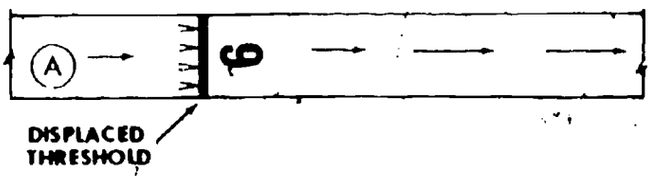
J02 1- right-hand traffic is in use at the airport.
2- the control tower is not in operation.
3- weather conditions are below basic VFR weather minimums.
4- the airport is temporarily closed.

BASIC RUNWAY MARKINGS

204. Refer to the runway direction markings above. The numbers 8 and 26 on the approach ends of the runway indicate that the runway is orientated approximately

J02 1- 080° and 260° magnetic.
2- 008° and 026° true.
3- 080° and 260° true.
4- 008° and 026° magnetic.

BASIC RUNWAY



205. Refer to the displaced threshold for Runway 9 above. That portion of the runway identified by the letter "A"

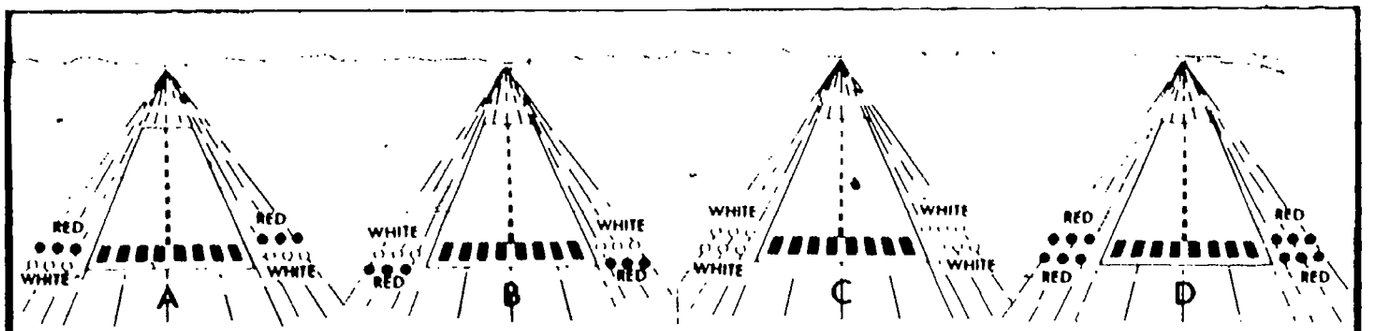
J02 1- is an "overrun area" that is available for landing at the pilot's discretion.
2- may be used only for landings.
3- may be used for taxiing but should not be used for takeoffs or landings.
4- may be used for taxiing or takeoffs but not for landing.

206. A flashing amber light near the center of an airport's segmented circle (or on top of the control tower or adjoining building) indicates that

J02 1- the control tower is not in operation.
2- a right-hand traffic pattern is in effect.
3- the airport is temporarily closed to VFR traffic.
4- weather conditions are below basic VFR weather minimums.

207. Operation of the rotating beacon at an airport in a control zone during the hours of daylight may indicate

J02 1- counterclockwise flow of traffic is required.
2- the ground visibility is less than 3 miles and/or the ceiling is less than 1,000 feet.
3- that right-hand traffic is required.
4- the airport is closed due to hazardous runway conditions.



VISUAL APPROACH SLOPE INDICATOR (VASI)

208. It is a good operating practice, at non-controlled airports not served by UNICOM, to broadcast position and intentions on the Aeronautical Multicom Service frequency of

J06
1- 123.0 MHz.
2- 123.6 MHz.
3- 121.5 MHz.
4- 122.9 MHz.

209. Illustration "A" above indicates that an aircraft is

J04
1- off course.
2- below the glidepath.
3- on the glidepath.
4- above the glidepath.

210. When BELOW THE GLIDEPATH during a VASI approach, what lights would be observed?

J04
1- Green lights.
2- Pink lights.
3- Red lights.
4- White lights.

211. If an airplane is ABOVE THE GLIDEPATH during a VASI approach, the pilot would observe

J04
1- green lights.
2- white over red lights.
3- red lights.
4- white lights.

212. VASI lights appearing as in Illustration "C" above would indicate that an airplane is

J04
1- off course to the left.
2- on the glidepath.
3- below the glidepath.
4- above the glidepath.

213. A pilot observing VASI lights as in Illustration "A" above would be

J04
1- receiving "VASI-inoperative" lights.
2- below the glidepath.
3- on the glidepath.
4- above the glidepath.

214. Assume that you are approaching an airport that is equipped with a VASI. To comply with regulations, an airplane approaching to land on a runway served by a VASI shall

J04
1- intercept and remain on the glide slope until touchdown only if the aircraft is operating on an instrument flight plan.
2- maintain an altitude that captures the glide slope at least 2 miles downwind from the runway threshold.
3- remain below the glide slope.
4- maintain an altitude at or above the glide slope.

215. While on final approach to a runway equipped with a standard two-bar VASI, you see the lights appear as in Illustration "D" above. This means that you are

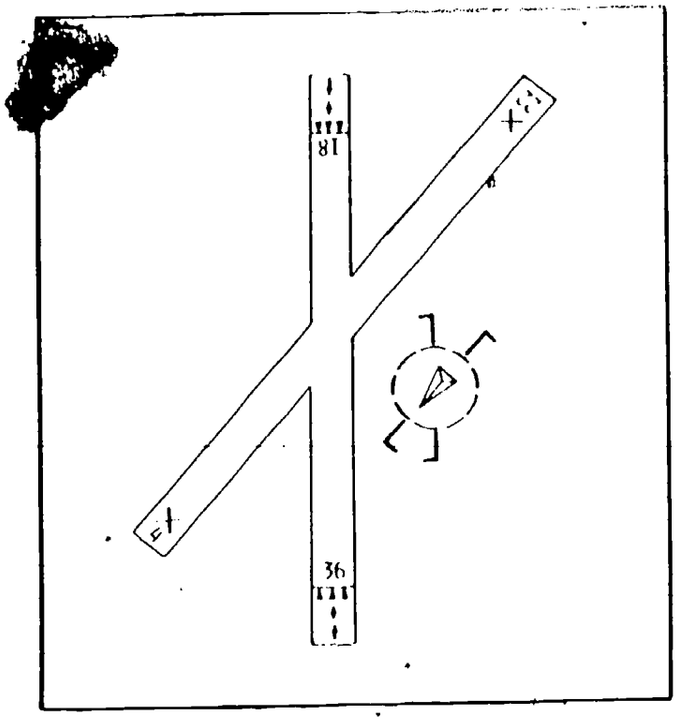
J04
1- receiving an erroneous light indication.
2- on the glidepath.
3- below the glidepath.
4- above the glidepath.

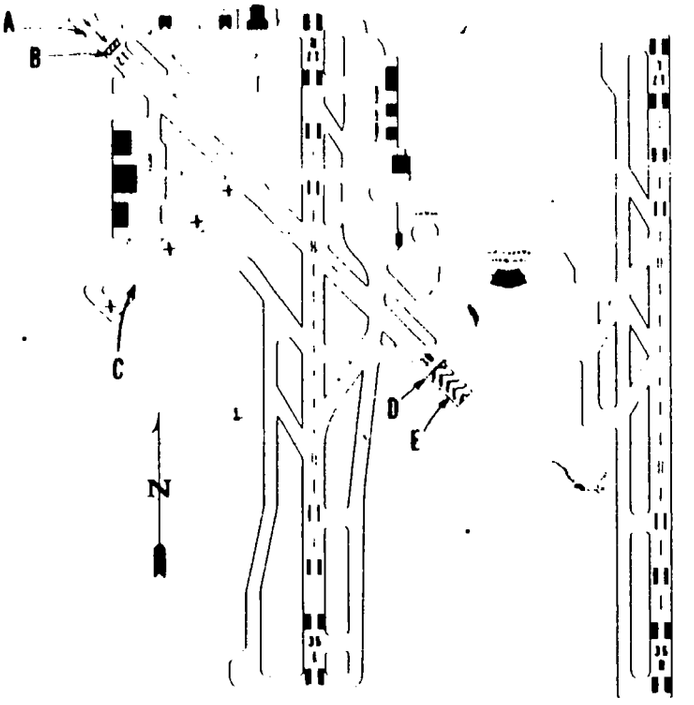
216. While on final approach to a runway equipped with a standard two-bar VASI, you see the lights appear as in Illustration "C" above. This means that you are

J04
1- receiving an erroneous light indication.
2- above the glidepath.
3- below the glidepath.
4- on the glidepath.

217. While on final approach to a runway equipped with a standard two-bar VASI, the lights appear as in Illustration "A" above. This means that you are

J04
1- receiving an erroneous light indication.
2- on the glidepath.
3- below the glidepath.
4- above the glidepath.





218. Refer to the runway markings and segmented circle above. If the wind is as shown by the landing direction indicator, you should land to the

J02
1- north on Runway 36 and expect a crosswind from the right.
2- south on Runway 18 and expect a crosswind from the right.
3- southwest beyond the "X" marking.
4- northeast beyond the "X" marking.

219. If the runway markings and segmented circle are as shown above, you should

J02
1- land on Runway 18 and anticipate a right-quartering headwind.
2- land on Runway 36 and anticipate a right crosswind.
3- land on Runway 22 as it is aligned with the wind and landing direction indicator.
4- turn left onto final approach and land on Runway 4.

220. Refer to the above runway markings and segmented circle. Which statement is true?

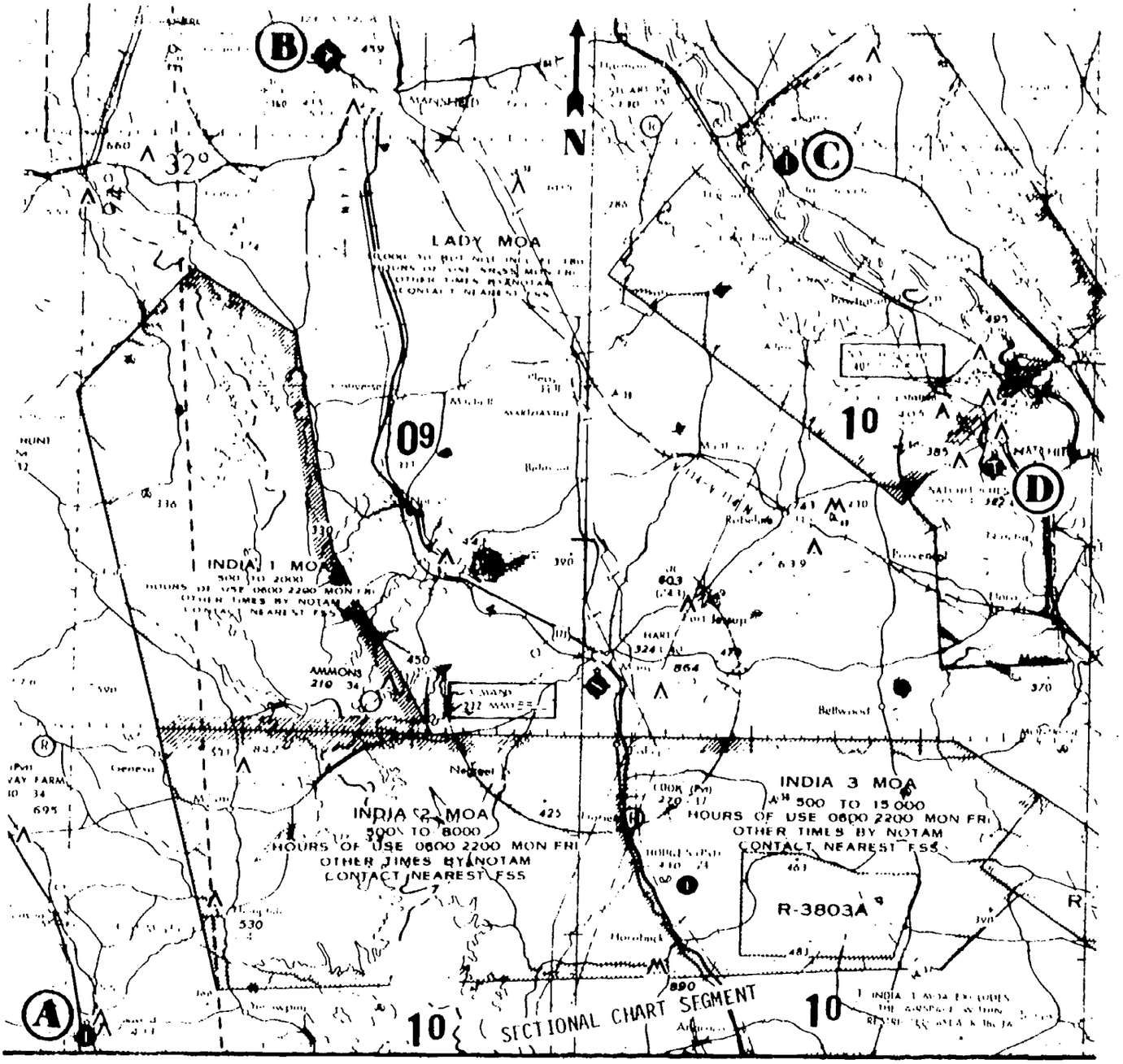
J02
1- You may land on Runways 36 and 18, but must be stopped prior to crossing Runways 4 and 22.
2- You should land on Runway 22 using left-hand traffic, as it is aligned with the prevailing wind direction.
3- Only Runways 36 and 18 are authorized for takeoffs and landings.
4- You should plan your approach to land beyond the "X" marking on Runway 4.

221. Refer to the airport diagram above. If a landing were to be made on Runway 12, which statement would be true relative to the runway markings?

J02
1- Area "E" contains an arresting device used by military aircraft.
2- All aircraft must terminate their landing roll prior to reaching the intersection of Runways 12-30 and 17-35.
3- Point "B" is the displaced threshold of Runway 12 and indicates the beginning portion of the runway usable for landing.
4- Area "A" should be used for landings in light airplanes only.

222. According to the airport diagram shown above, it can be determined that

J02
1- takeoffs and landings are permissible at position "C" since this is a Short Takeoff and Landing (STOL) Runway.
2- the takeoff and landing portion of Runway 12 begins at position "B."
3- Runway 30 is equipped at position "E" with emergency arresting gear to provide a means of stopping military aircraft.
4- takeoffs may be started at position "A" on Runway 12, and the landing portion of this runway begins at position "B."



223. Refer to the chart excerpt above. Concerning the LADY MOA and a proposed flight from airport "B" to airport "D," select the true statement.

J07
1- You should circumnavigate the MOA by flying around the southern tip of it.
2- Between Mondays and Fridays a pilot should contact the nearest FSS for rerouting around the area for a flight to airport "D."
3- Nonparticipating IFR traffic may be cleared through the MOA, and VFR pilots should exercise caution while flying within the area.
4- The appropriate military authority having jurisdiction over the area must be contacted to obtain permission to fly within the area.

224. Refer to the chart above. Assume you are planning a VFR flight from airport "B" to airport "C." Which statement is true in regard to flying within the LADY MOA?

J07
1- You may fly direct to airport "C," even though military training activities exist within the area, and you should exercise caution.
2- The nearest FSS must be contacted to provide you Enroute Flight Advisory Service through the area.
3- A VFR flight plan must be filed with a proposed altitude below 10,000 feet MSL.
4- You must plan your proposed flight on a weekend when the area is not in use by the military.

225. Refer to the chart to the left. Assume that you plan to fly VFR from airport "A" to airport "B" during the hours that the India 1 MOA is in use by the military. You

J07
1- must file an IFR flight plan in order to fly within this area above 2,000 feet MSL.
2- may fly direct to airport "B" and you should exercise caution while flying within the area.
3- should circumnavigate the MOA and remain outside the western boundary.
4- should contact the nearest FSS and file a Defense Visual Flight Rule (DVFR) flight plan.

226. Select the true statement concerning aircraft flight within a Restricted Area.

J07
1- Restricted Areas denote the existence of unusual and often invisible hazards to aircraft.
2- A Restricted Area is that airspace which contains the intensive training activities of military student jet pilots.
3- Restricted Areas have been established over international waters.
4- Flight within this airspace is prohibited.

227. Select the true statement concerning aircraft flight within the airspace of a Restricted Area.

J07
1- The pilot must be instrument rated and file an IFR flight plan before penetrating a Restricted Area.
2- Flight within a Restricted Area is prohibited during the hours of daylight.
3- Before penetrating a Restricted Area, authorization must be obtained from the controlling agency.
4- The aircraft must have an operable VOR receiver, two-way communications radio, and a radar beacon transponder.

228. The continuous broadcast of recorded noncontrol information in selected high activity terminal areas is referred to as

J08
1- Terminal Radar Service Area (TRSA).
2- Terminal Control Area (TCA).
3- Automatic Terminal Information Service (ATIS).
4- Transcribed Weather Broadcasts (TWEBs).

229. Automatic Terminal Information Service (ATIS) is the continuous broadcast of recorded information

J08
1- alerting pilots of radar identified aircraft when their aircraft is in unsafe proximity to terrain or obstruction.
2- concerning nonessential information to relieve frequency congestion.
3- concerning noncontrol information in selected high activity terminal areas.
4- concerning sky conditions limited to ceilings below 1,000 feet and visibilities less than 3 miles.

230. Pilots of aircraft arriving or departing certain high activity terminal areas can receive continuous broadcasts concerning essential but routine information by using

J08
1- Aeronautical Advisory Stations (UNICOM).
2- Automatic Terminal Information Service (ATIS).
3- Aeronautical Multicom Service.
4- Radar Traffic Information Service.

231. Assume that during VFR weather conditions ATC is providing a pilot with Radar Traffic Information Service. If the pilot does not intend to terminate this service, when will the service be terminated?

J10
1- When the controller advises the pilot that radar service is terminated.
2- After departing an Airport Traffic Area.
3- After departing the control zone.
4- When the aircraft reaches a point at least 25 statute miles from the departure airport.

232. Assume while flying on a north heading that you are using Radar Traffic Information Service and the wind is calm. You receive the following traffic advisory:

"TRAFFIC 9 O'CLOCK, 2 MILES, SOUTHBOUND . . ."

You should look for this traffic

J10
1- behind your right wingtip.
2- off your left wingtip.
3- ahead of your left wingtip.
4- off your right wingtip.

233. Assume you receive the following radar traffic advisory.

"TRAFFIC 11 O'CLOCK, 1 MILE, EASTBOUND . . ."

If the wind is calm you should look for this traffic

J10
1- off your right wingtip.
2- between the nose of the airplane and the right wingtip.
3- behind the left wingtip.
4- between the nose of the airplane and the left wingtip.

234. Assume that you are flying on an east heading in the vicinity of a busy airport and obtain Radar Traffic Information Service. The wind is calm and you receive the following traffic advisory:

"TRAFFIC 3 O'CLOCK, 2 MILES, WESTBOUND . . ."

You should look for this traffic in the direction of your airplane's

J10
1- left wingtip, and ahead of you.
2- left wingtip.
3- right wingtip.
4- nose and slightly to the right.

235. Suppose that you are flying north with a direct headwind and receive the following radar traffic advisory:

"TRAFFIC 3 O'CLOCK, 2 MILES, SOUTHBOUND . . ."

You would look for this traffic in a direction approximately

J10
1- 10° behind the left wing of your airplane.
2- 60° to the left of the nose of your airplane.
3- 30° to the right of the nose of your airplane.
4- 20° to the left of the nose of your airplane.

236. If Air Traffic Control advises that radar service is being terminated when you are departing a Terminal Radar Service Area, the transponder should be set to Code

J10
1- 0000.
2- 1200.
3- 4096.
4- 7700.

237. Refer to the excerpts to the right. VFR aircraft approaching the airport from the south should, when in the vicinity of Blanchard, contact Approach Control on the frequency of

J11
1- 119.3 MHz.
2- 124.2 MHz.
3- 125.6 MHz.
4- 115.0 MHz.

238. Refer to the excerpts to the right. To participate in Stage III Service provided within the Terminal Radar Service Area (TRSA), the proper sequence of radio frequencies to use when entering the area is to

J11
1- tune in the ATIS on 125.6 MHz, then contact the tower on 118.3 MHz.
2- contact clearance delivery on 123.7 MHz, then ATIS on 125.6 MHz.
3- contact the tower on 118.3 MHz, then ground control on 121.9 MHz.
4- tune in the ATIS on 125.6 MHz, then contact Approach Control on 124.2 MHz or 119.3 MHz depending on your location.

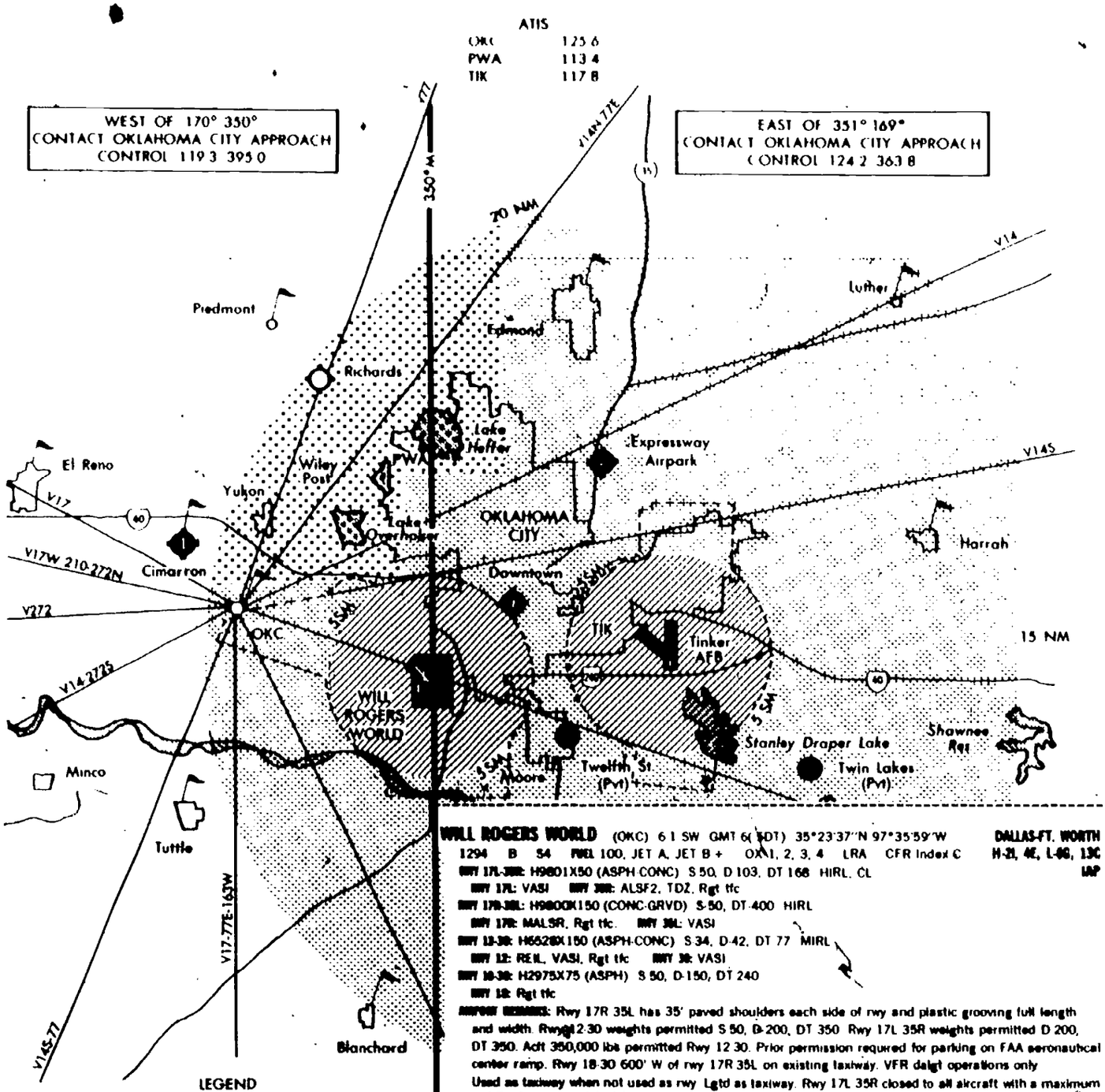
239. Refer to the excerpts to the right. A VFR aircraft is approaching from the northeast on Victor 14 and participation in Stage III Service within the TRSA is desired. In the vicinity of Luther the pilot should contact

J11
1- Oklahoma City FSS Arrival Control to obtain a special VFR clearance to enter the TRSA.
2- Oklahoma City Radio for instructions.
3- Oklahoma City Approach Control for radar separation from all IFR and participating VFR aircraft.
4- Will Rogers World Airport Control Tower for instructions.

240. Refer to the excerpts to the right. Which is a true statement concerning the Terminal Radar Service Area for Will Rogers World Airport?

J11
1- VFR aircraft approaching from the south over Blanchard should contact Approach Control on 124.2 MHz.
2- A VFR aircraft approaching from the northwest on V17 should contact Approach Control when over El Reno.
3- VFR aircraft approaching from the northeast on V14 over Luther should contact Approach Control on 119.3 MHz.
4- For radar vectoring you should contact Oklahoma City Radio.

OKLAHOMA CITY, OKLAHOMA WILL ROGERS WORLD AIRPORT
FIELD ELEV. 1294' MSL



WILL ROGERS WORLD (OKC) 6 1 SW GMT 6(5 DT) 35°23'37"N 97°35'59"W — DALLAS-FT. WORTH
1294 B S4 FUEL 100, JET A, JET B + OX 1, 2, 3, 4 LRA CFR Index C — H-2I, 4E, L-8G, 13C
IAP

RWY 17L-35R: H9801X50 (ASPH-CONC) S 50, D 103, DT 168 HIRL, CL
RWY 17L: VASI RWY 35R: ALSF2, TDZ, Rgt tfc
RWY 17R-35L: H9800X150 (CONC-GRVD) S-50, DT-400 HIRL
RWY 17R: MALSR, Rgt tfc. RWY 35L: VASI
RWY 13-31: H6526X150 (ASPH-CONC) S 34, D-42, DT 77 MIRL
RWY 13: REIL, VASI, Rgt tfc RWY 31: VASI
RWY 18-36: H2975X75 (ASPH) S 50, D-150, DT 240
RWY 18: Rgt tfc

AIRPORT REMARKS: Rwy 17R 35L has 35' paved shoulders each side of rwy and plastic grooving full length and width. Rwy 13 2-30 weights permitted S 50, D-200, DT 350. Rwy 17L 35R weights permitted D 200, DT 350. Acft 350,000 lbs permitted Rwy 12 30. Prior permission required for parking on FAA aeronautical center ramp. VFR dalgt operations only Used as taxiway when not used as rwy. Lgtd as taxiway. Rwy 17L 35R closed to all aircraft with a maximum certificate gross weight in excess of 54000 lbs until further notice (with exception) of ceiling below 3000 ft or vsby less than 3 miles and Indg/tkof opr requiring Rwy 35R or Rwy 17R 35L is closed

COMMUNICATIONS: ATIS 125.6 UNICOM 123.0
OKE CITY FSS (OKC)
(R) OKE CITY APP CON 119.3 (170-350°) 124.2 (351-169°)
ROGERS TOWER 118.3 GND CON 121.9 CLNC DEL 123.7 PRE-TAXI CLNC 123.7
(R) OKE CITY DEP CON 124.6 (170-350°) 121.05 (351-169°)
STAGE FIELD SVC ctc APP CON
RADIO AIDS TO NAVIGATION: VOT 108.8
OKLAHOMA CITY (H) TACAN 11 50 OKC Chan 97 35°26'32.7"N 97°46'20.6"W 096° 5.0 NM to fld
TULOO NDB (LOM/LMM) 406 OK 35°28'17.2"N 97°36'18.2"W 171° 4.0 NM to fld
GALLY NDB (LOM) 219 RG 35°18'35.8"N 97°35'16.7"W 340° 4.2 NM to fld
ILS 110.9 I-RGR Rwy 35R LOM GALLY NDB
ILS 110.7 I-OKC Rwy 17R LOM TULOO NDB
AWOS

COMM/NAV REMARKS: ATIS ops 1300-0600Z‡

241. Stage III Service within Terminal Radar Service Areas (TRSAs) utilize radar to provide

J11
1- separation between all VFR aircraft operating within TRSAs.
2- radar vectoring if the weather minimums are below VFR conditions.
3- separation between IFR aircraft, because VFR aircraft are not permitted in the area.
4- separation between all participating VFR aircraft and IFR aircraft operating within TRSAs.

242. To determine if UNICOM is available at an airport without a control tower, you should refer to

J12
1- the Automatic Terminal Information Service (ATIS).
2- the appropriate Airport/Facility Directory.
3- Graphic Notices and Supplemental Data.
4- the Notices to Airmen (NOTAMS).

243. Which one of the following statements is true in regard to UNICOM?

J12
1- UNICOM is a service provided by radar air traffic control facilities.
2- VFR flight plans should be filed through UNICOM at nontower airports.
3- UNICOM use is limited to Air Traffic Control.
4- UNICOM is not intended to be used for Air Traffic Control purposes.

244. In regard to UNICOM, select the true statement from the following:

J12
1- UNICOM may not be used for any communication, other than providing known traffic, runway in use, and wind conditions.
2- UNICOM radio frequencies are assigned to Aeronautical Advisory Stations at certain airports not served by a control tower.
3- To obtain the correct UNICOM frequency for a particular airport, a pilot should contact the nearest FSS.
4- UNICOM radio stations are assigned by the FAA to control traffic at nontower airports.

245. Which statement is true concerning UNICOM?

J12
1- UNICOM is not to be used for air traffic control purposes.
2- UNICOM is used for air traffic control purposes at nontower airports.
3- UNICOM frequencies are used by Flight Service Stations at nontower airports to provide airport advisory service.
4- UNICOM frequencies are assigned exclusively for communication purposes at private airports.

246. Refer to the data to the right. To obtain a weather briefing at Muscle Shoals Airport, you could

J15
1- tune in the Muscle Shoals H-SAB radio facility which provides Automatic Aviation Weather Service broadcasts (AAWS).
2- use the restricted telephone number to receive weather information from the FSS.
3- call the FSS for "one call" FSS/WSO briefing service.
4- call or visit the Muscle Shoals VORTAC.

247. Refer to the data to the right. In preflight planning, to obtain a weather briefing at Anniston-Calhoun County Airport you could

J15
1- call or visit Anniston FSS located on the airport.
2- call Anniston FSS for "one call" FSS/WSO briefing service.
3- use the Automatic Aviation Weather Service (AAWS).
4- use the Pilot's Automatic Telephone Weather Answering Service (PATWAS) located on the airport.

248. Refer to the data to the right. To obtain a weather briefing at Muscle Shoals Airport you could

J15
1- expect to receive a complete weather briefing when you use the Fast File Flight Plan telephone number.
2- use the Pilot's Automatic Telephone Weather Answering Service (PATWAS).
3- visit the Weather Service Office located on the airport.
4- tune in the nondirectional radiobeacon facility, which provides Automatic Aviation Weather Service broadcasts (AAWS).

FSS–CS/T AND NATIONAL WEATHER SERVICE TELEPHONE NUMBERS

Flight Service Stations (FSS) and Combined Station/Tower (CS/T) provide information on airport conditions, radio aids and other facilities, and process flight plans. CS/T personnel are not certificated pilot weather briefers, however, they provide factual data from weather reports and forecasts. Airport Advisory Service is provided at the pilot's request on 123.6 by FSSs located at airports where there are not control towers in operation. (See Airman's Information Manual Basic Flight Information and ATC Procedures.)

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.

FAST FILE FLIGHT PLAN SYSTEM

Some Flight Service Stations have inaugurated this system for pilots who desire to file IFR/VFR flight plans with or without a weather briefing. Pilots may call the discrete telephone numbers listed and file flight plans in accordance with prerecorded taped instructions. IFR flight plans will be extracted from the recorder and subsequently entered into the appropriate ARTCC computer. VFR flight plans will be transcribed; and both IFR/VFR flight plans will be filed in the FSS. This equipment is designed to automatically disconnect after 8 seconds of no transmission, so pilots are instructed to speak at a normal speech rate without lengthly pauses between flight plan elements. Pilots are urged to file flight plans into this system at least 30 minutes in advance of proposed departure. The system may be used to close and cancel flight plan.

Preflight weather briefing services remain available through regular telephone numbers.

★ Indicates Pilot's Automatic Telephone Weather Answering Service (PATWAS) or telephone connected to the Transcribed Weather Broadcast (TWEB) providing transcribed aviation weather information.

◆ Indicates a restricted number, use for aviation weather information.

▬ Call FSS for "one call" FSS–WSO briefing service.

Automatic Aviation Weather Service (AAWS).

§§ Indicates Fast File telephone number for pre-recorded and transcribed flight plan filing only.

Location and Identifier		Area Code	Telephone
ALABAMA			
Anniston ANB	FSS	(205)	831–2303
Birmingham BHM	FSS	(205)	254–1387▬
	FSS	(205)	595–2101★
N. W. Route			595–5416 #
S. E. Route			595–6452 #
N. E. Route			595–7957 #
S. W. Route			595–7896 #
Dothan DHN	FSS	(205)	983–3551
Huntsville	WS	(205)	772–3521◆
Mobile MOB (Bates)	FSS	(205)	344–3610▬
Montgomery MGM (Dannelly)	FSS	(205)	832–7516▬
Muscle Shoals MSL	FSS	(205)	383–6541▬
	FSS	(205)	381–2500★
Tuscaloosa TCL	FSS	(205)	758–3628

AIRPORT/FACILITY DIRECTORY

ALABAMA

§ **ANNISTON-CALHOUN CO** (ANB) 5 2 SW GMT 6(5DT) 33°35 25' N 85°51 21' W — ATLANTA
611 B S4 FUEL 100, JET A1 + CFR Index A — H-4G, L-14H
RWY 05-23: H5008X150 (ASPH) S-30, D-48, DT-75 L2 .34% up NE — IAP
RWY 05: REIL, VASI G.A. 3.25° TCH 27' Rgt tfc RWY 23: VASI G.A. 3.75° TCH 25'
AIRPORT REMARKS: Attended 1300 0300Z‡ For service and fuel after 0300Z‡ call (205) 831 7941
COMMUNICATIONS: UNICOM 123 0
ANNISTON FSS (ANB) on arpt 123 6, 122 3, 122 2, 108 8T (205) 831 2303
BIRMINGHAM APP/DEP CON 118 25
RADIO AIDS TO NAVIGATION:
ANNISTON VOR (BMH) 278 ANB 33°35'25"N 85°51'03"W at fld
ILS 111 5 I ANB rwy 05 BC unusable

§ **MUSCLE SHOALS** (MSL) 9 E GMT 6(5DT) 34°44'44"N 87°36'40"W — ATLANTA
550 B S4 FUEL 80, 100, JET A1 + CFR Index A — H-4G, L-14G
RWY 11-29: H6693X150 (ASPH) S-59, D-98, DT-160 HIRL — IAP
RWY 11: VASI. Trees RWY 29: MALSR. Tower
RWY 18-36: H4000X150 (ASPH) S-30, D-50 MIRL
RWY 18: Tree. RWY 36: Tree
AIRPORT REMARKS: Attended daylt hours, nights call (205) 383 1744 Night svc chg During calm winds pref rwy is Rwy 29
COMMUNICATIONS: UNICOM 123 0
MUSCLE SHOALS FSS (MSL) on arpt 123.6 122 4 122 2 122 1R (205) 383 6541
Ⓡ HUNTSVILLE APP/DEP CON 118.75 118 05
RADIO AIDS TO NAVIGATION: 123 0
(L) VORTAC 116 5 MSL Chan 112 34°42'24"N 87°29'29"W 291° 5 6 NM to arpt
ILS 109 7 I MSL Rwy 29

249. Breathing CARBON MONOXIDE can prove to be very hazardous in flight. Which statement is true regarding this hazard?

J19
1- Carbon monoxide forces oxygen to be attached to the hemoglobin.
2- A small quantity of carbon monoxide is harmless.
3- An increase in altitude decreases the adverse effect/influence of carbon monoxide.
4- Blurred (hazy) thinking, an uneasy feeling, and dizziness are symptoms of carbon monoxide poisoning.

250. Assume that during a night flight you lose all outside visual references and become spatially disoriented. In this situation, you are probably experiencing

J19
1- mild motion sickness.
2- vertigo.
3- carbon monoxide poisoning.
4- the first indication of chronic fatigue.

251. Which statement is true regarding ALCOHOL in the human system?

J19
1- Aspirin increases the rate the body metabolizes alcohol.
2- Small amounts of alcohol in the human system increase judgment and decision-making abilities.
3- An increase in altitude decreases the adverse effect/influence of alcohol.
4- A common misconception is that coffee alters the rate a body metabolizes alcohol.

252. To preclude the effects of hypoxia, you should

J19
1- avoid flying above 10,000 feet MSL for prolonged periods without breathing supplemental oxygen.
2- rely on your body's built-in alarm system to warn when you are not getting enough oxygen.
3- try swallowing, yawning, or holding the nose and mouth shut, and forcibly try to exhale.
4- avoid hyperventilation which is caused by rapid heavy breathing, and results in excessive carbon dioxide in the bloodstream.

253. A pilot should be able to overcome the symptoms or avoid future occurrences of hyperventilation by

J19
1- closely monitoring the flight instruments to control the airplane.
2- slowing the breathing rate, breathing into a bag, or talking aloud.
3- increasing the breathing rate in order to increase lung ventilation.
4- refraining from the use of over-the-counter remedies and drugs such as antihistimines, cold tablets, tranquilizers, etc.

254. Suppose a pilot experiences vertigo in a restricted visibility condition (dust, smoke, or snow showers). The best way to overcome the effects of vertigo is to

J19
1- depend on sensations received from the fluid in the semicircular canals of the inner ear.
2- concentrate on any "yaw," "pitch," and "roll" sensations.
3- consciously slow your breathing rate until symptoms clear and then resume normal breathing rate.
4- rely upon the aircraft instrument indications.

255. HYPOXIA is considered to be an in-flight hazard. Which statement is true concerning this hazard?

J19
1- Your body has a built-in alarm system to alert you when you are not receiving enough oxygen.
2- Heavy smokers may experience early symptoms of hypoxia at lower altitudes than nonsmokers.
3- Carbon monoxide increases the brain's tolerance of hypoxia.
4- Alcohol increases the brain's tolerance of hypoxia.

256. The letters "VHF/DF" appearing in the Airport/Facility Directory for a certain airport, indicate that

J17
1- this airport is designated as an "Airport of Entry."
2- the Flight Service Station has equipment with which to determine your direction from the station.
3- this airport has a direct-line phone to the Flight Service Station.
4- this airport is a defense facility.

257. To use VHF/DF (Direction Finder) facilities, you must have an operable

J17
1- transmitter and receiver.
2- radar beacon transponder.
3- ADF receiver.
4- VOR receiver.

258. Certain ground-based stations have equipment which indicates the magnetic direction of the aircraft from the station each time the aircraft transmits. This equipment is known as

J17
1- Compass Locator (Comlo).
2- Direction Finder (DF).
3- Simplified Directional Facility (SDF).
4- Airport Advisory Service (AAS).

259. When telephoning a weather briefing facility for preflight weather information, pilots should

J15
1- identify themselves as pilots.
2- tell the number of hours they have flown within the preceding 90 days.
3- state the number of occupants on board and the color of the aircraft.
4- state that they possess a current medical certificate.

260. When telephoning a weather briefing facility for preflight weather information, you should state

J15
1- that you possess a current medical certificate.
2- your intended route, destination, and type of aircraft.
3- the color of the aircraft and number of occupants on board.
4- your total flight time.

261. When telephoning a weather briefing facility for preflight weather information, you should state

J15
1- the number of hours you have flown within the preceding 90 days.
2- that you possess a current medical certificate.
3- whether you intend to fly VFR only.
4- the color of the aircraft and number of occupants on board.

262. A preflight weather briefing would be incomplete if it did not include at least

J15
1- synoptic weather and airspace restrictions.
2- forecast winds and weather and all pertinent radio navigation facilities.
3- winds aloft and current forecasts, weather synopsis (pressure systems and fronts), and possible hazardous weather.
4- the availability of Transcribed Weather Broadcasts (TWEBs) while enroute, plus the items in response 2.

263. When you telephone a weather briefing facility for preflight weather information, you should

A. identify yourself as a pilot (student, private, or commercial).
B. state your intended route and destination.
C. identify the radio communications equipment aboard the aircraft.
D. state the number of persons aboard and the color of the aircraft.

Which of the above statements are true?

J15
1- A, B, and C.
2- A and D.
3- A, B, C, and D.
4- A and B.

264. When telephoning a weather briefing facility for preflight weather information, you should give at least the

J15
1- total pilot flight time.
2- proposed departure time and estimated time enroute.
3- aircraft color and number of occupants aboard.
4- expiration date of your medical certificate.

265. Flight Service Stations having voice facilities on VOR stations or radiobeacons (NDBs), broadcast scheduled weather reports and NOTAM information

J15
1- at 30 minutes past each hour.
2- on the hour each hour.
3- at 15 minutes and 45 minutes past each hour.
4- at 15 minutes past each hour.

266. Which statement is true concerning the breathing of CARBON MONOXIDE?

J19
1- A small quantity of carbon monoxide is harmless.
2- Carbon monoxide poisoning is more likely to occur in summer months than in winter months.
3- An increase in altitude decreases the adverse effect/influence of carbon monoxide.
4- It may take several days to fully recover from the effects of carbon monoxide.

267. Which statement is true concerning HYPOXIA?

J19
1- By repeated exposure, a person can become immune to the effects of hypoxia.
2- Hypoxia occurs only at altitudes above 10,000 feet.
3- It is impossible to predict when, where, and how hypoxia will manifest itself.
4- Alcohol increases the brain's tolerance of hypoxia.

268. A state of temporary spatial confusion resulting from misleading information being sent to the brain by various sensory organs is defined as

J19
1- vertigo.
2- hyperventilation.
3- hypoxia.
4- motion sickness.

269. Breathing CARBON MONOXIDE is considered to be an in-flight hazard. Which statement is true regarding this hazard?

J19
1- Carbon monoxide forces oxygen to be attached to the hemoglobin.
2- Small amounts of carbon monoxide in the human system increase judgment and decision-making abilities.
3- Even small amounts of carbon monoxide breathed over a long period of time may be harmful.
4- Remaining below 10,000 feet diminishes the chance of becoming poisoned by carbon monoxide.

270. Which statement is true concerning the in-flight hazard called HYPOXIA?

J19
1- Alcohol decreases the brain's tolerance of hypoxia.
2- Your body has a built-in alarm system to alert you when you are not receiving enough oxygen.
3- Carbon monoxide increases the brain's tolerance of hypoxia.
4- Without supplemental oxygen, a non-smoker will experience hypoxia at a lower altitude than a heavy smoker.

271. Which statement is true concerning the in-flight hazard called HYPOXIA?

J19
1- Carbon monoxide has no effect on a person's tolerance of hypoxia.
2- Without supplemental oxygen, a non-smoker will experience hypoxia at a lower altitude than a heavy smoker.
3- Often a major early symptom of hypoxia is an increased sense of well-being.
4- A built-in alarm system in your body warns you when you are receiving insufficient oxygen.

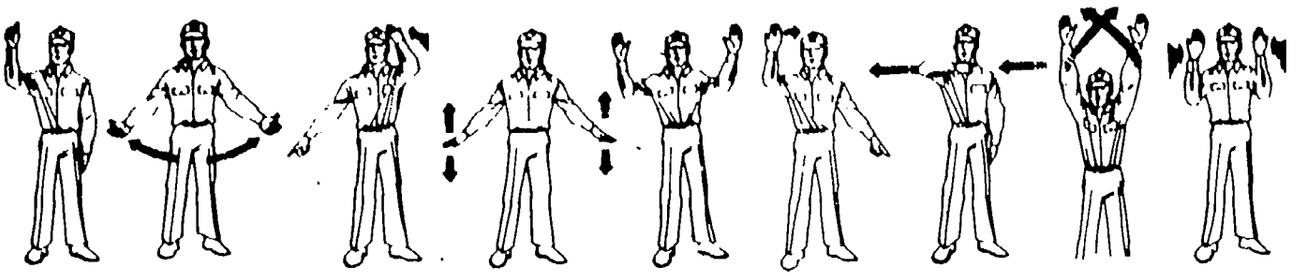
272. Which statement concerning hypoxia is true?

J19
1- A built-in alarm system in the body warns a person that insufficient oxygen is being received.
2- Night vision can be impaired when a person receives insufficient oxygen.
3- Carbon monoxide has no effect on a person's tolerance of hypoxia.
4- Without supplemental oxygen, a non-smoker will experience hypoxia at a lower altitude than a heavy smoker.

273. Which statement is true regarding alcohol in the human system?

J19
1- Aspirin increases the rate the body metabolizes alcohol.
2- An increase in altitude increases the adverse effect/influence of alcohol.
3- Small amounts of alcohol in the human system increase judgment and decision-making abilities.
4- Coffee dilutes the effects of alcohol.

HAND SIGNALS



274. Sectional Charts for the conterminous United States are updated each

J20
1- 3 months.
2- 6 months.
3- 12 months.
4- 24 months.

275. When nearing a VOR station that you are using for navigation, what vital action should be taken?

J20
1- Exercise vigilance to avoid other aircraft which might be converging on the station from other directions.
2- Pass to the right of the station.
3- Pass to the left of the station.
4- Concentrate on the omni indicator and carefully make corrections so as to pass directly over the VOR station.

276. Refer to the illustration above. Which hand signal means "slow down"?

J20
1- B.
2- D.
3- H.
4- I.

277. Refer to the illustration above. The hand signal "E" means

J20
1- stop.
2- start the engine(s).
3- all clear.
4- the chocks have been pulled.

278. Refer to the illustration above. Assume you have taxied into a parking area and the signalman gave hand signals as shown in positions "I", "D", and "F". The meaning of these hand signals in the sequence given are

J20
1- all clear, stop, and right turn.
2- come ahead, emergency stop, and left turn.
3- come ahead, slow down, and right turn.
4- all clear, stop, and cut engine(s)

279. Refer to the illustration above. Which signalman is using the hand signal for a left turn?

J20
1- A.
2- C.
3- F.
4- G.

280. Refer to the illustration above. Signalman "G" is giving the hand signal to

J20
1- stop.
2- turn left.
3- cut engine(s).
4- start engine(s).

281. Refer to the illustration above. Which signalman is giving the emergency stop signal?

J20
1- B.
2- D.
3- H.
4- I.

282. Refer to the illustration above. Which signalman is giving the all clear signal?

J20
1- A.
2- E.
3- G.
4- I.

283. Refer to the illustration above and select the true statement concerning the hand signals shown.

J20
1- Signal C means right turn.
2- Signal D means stop.
3- Signal E means all clear.
4- Signal G means cut engine(s).

284. Which signalman above is giving the hand signal for an emergency stop?

J20
1- D.
2- E.
3- G.
4- H.

ARKANSAS

§ **JONESBORO** (JBR) 2 6 E GMT 6(5DT) 35°49 5' N 90° 38 4 7' W — MEMPHIS
262 B S4 FUEL 80, 100 JET A+ CFR Index A — H-4F, L-14F
RWY 05-23: H5599X150 (ASPH) S 80 D 90 DT 140 MIRL — IAP
RWY 23: VASI
RWY 14-32: H4101X150 (ASPH) S 30 MIRL
RWY 14: Thld dsplcd 130 RWY 32: Railway 700' thld dsplcd 160
RWY 18-36: H3943X60 (ASPH) S 30
RWY 18: Trees 1800' Thld dsplcd 160 RWY 36: Bldg 1400' from thld Thld dsplcd 347'
AIRPORT REMARKS: Attended 1200-0100Z‡ Control Zone effective 1200-0400Z‡
COMMUNICATIONS: UNICOM 123 0
JONESBORO FSS (JBR) on fld 123 6 122 3 122 2 122 1R 108 6T (501) 935 3471
Opr 1200-0400Z‡ DL dial 0 ask for ENTERPRISE 0246 0 1 ctc Memphis FSS
RADIO AIDS TO NAVIGATION
(T) VOR 108 6 JBR 35°52 30" N 90° 35 18" W 222° 3 1 NM to fld Unmonitored 0400-1200Z‡

PINE BLUFF 34°14 48' N 91°55 34' W — MEMPHIS
(L) VORTAC 116 0 PBF Chan 107 181° 3 9 NM to Grider Fld — L-14F
VOR unusable 054° 075° beyond 35 NM below 5000'
170° 185° beyond 30 NM below 2000'
236° 249° beyond 20 NM below 6000' or beyond 26 NM below 13000'
TACAN az unusable 091° 129° beyond 20 NM below 3500'

PINE BLUFF

GRIDER FLD (PBF) 4.3 SE GMT 6(5DT) 34°10'32"N 91°56'07"W — MEMPHIS
206 B S4 FUEL 80, 100 JET A CFR Index A — H-4F, L-14F
RWY 17-35: H6000X150 (ASPH) S 50 D 70 DT 110 HIRL — IAP
RWY 17: MALSR, VASI Key 118 4 7 times in 5 sec for high, 5 times in 5 sec for med, 3 times in 5 sec for low intensity
RWY 35: VASI
AIRPORT REMARKS: Attended 1300-0500Z‡ On call other hrs Control Zone effective 1200-0400Z‡
COMMUNICATIONS:
LITTLE ROCK FSS (LIT) DL 536 8466
PINE BLUFF FSS (PBF) 123 6 on arpt (501) 536 8466 Opr 1400 2200Z‡
Flight planning/briefing svc only
PINE BLUFF RCO 122 6 122 2 122 1R 116 0T (LITTLE ROCK FSS)
PINE BLUFF APP/DEP CON 118 4 Opr 1200-0400Z‡
LITTLE ROCK APP/DEP CON 124 2 0400-1200Z‡
PINE BLUFF TOWER: 118 4 Opr 1200-0400Z‡ GND CON 122 7
RADIO AIDS TO NAVIGATION:
PINE BLUFF (L) VORTAC 116 0 PBF Chan 107 34°14 48"N 91°55'34"W 181° 3.9 NM to fld
VOR unusable 054° 075° beyond 35 NM below 5000'
170° 185° beyond 30 NM below 2000'
236° 249° beyond 20 NM below 6000' or beyond 26 NM below 13000'
TACAN az unusable 091° 129° beyond 20 NM below 3500'
ILS 111 7 I PBF RWY 17 LOC only

LITTLE ROCK 34°40'39"N 92°10'49"W — MEMPHIS
(H) VORTAC 113.9 (LIT) Chan 86 315° 3 8 NM to Adams Fld — H-4F, L-14E

LITTLE ROCK FSS (LIT) on Adams Fld — MEMPHIS
122.55, 122.35, 122.2, 122 1R, 113 9T (501) 376-0721 — H-4B, L-14E

LITTLE ROCK

§ **ADAMS FIELD** (LIT) 1 7 E GMT 6(5DT) 34°43'48"N 92°13'59"W — MEMPHIS
257 B S4 FUEL 80, 100 JET A OX 1, 3 LRA CFR Index C — H-4B, L-14E
RWY 04-22: H7010X150 (ASPH) S 70 D 90, DT 140 HIRL — IAP
RWY 04: SSALR Thld dsplcd 127' RWY 22: MALSR VASI
RWY 17-35: H5125X150 (ASPH) S 30, D 45, DT 70 MIRL
RWY 17: Road 260' Thld dsplcd 270' RWY 35: Road 33' ALSF 1
RWY 14-32: H4032X150 (ASPH) S 26 MIRL
RWY 14: Road 220' Thld dsplcd 365' RWY 32: Trees 3000'
AIRPORT REMARKS: Landing fee Rwy 14 32 closed to air carriers
Transient acft parking at airline terminal ramp ctc arpt police at airline concourse for reentry to locked operations area
COMMUNICATIONS: ATIS 125 6 1200-0600Z‡ UNICOM 123 0
LITTLE ROCK FSS (LIT) on fld 122 55 122 35 122 2 122 1R 113 9T (501) 376 0721
(R) LITTLE ROCK APP CON: 124 2 042° 221° 119 5 222° 041° 118 1
TOWER: 118 7 123 85 GND CON: 121.9
(R) LITTLE ROCK DEP CON: 124 2 041°-220° 119 5 221°-040° 118 1
STAGE III SVC ctc APP CON 20 NM, check ATIS
RADIO AIDS TO NAVIGATION:
LITTLE ROCK (H) VORTAC 113 9 LIT Chan 86 34°40'39"N 92°10'49"W 315° 3 8 NM to fld
LASKY NDB (H-SAB) 353 LI 34°57 09"N 92°01'09"W 041° 4 6 NM to fld
ILS 110 3 I LIT Rwy 04 LOM LASKY NDB
LO 3 I AAY Rwy 22
ASR

NOTE: AN AIRPORT/FACILITY DIRECTORY LEGEND IS INCLUDED IN THE BACK PORTION OF THIS BOOKLET.

285. In the conterminous United States, sectional charts are updated each

J20
1- 6 months.
2- 8 months.
3- 12 months.
4- 24 months.

286. Refer to the Airport/Facility Directory data to the left. Which statement is true concerning Jonesboro Airport?

J21
1- Runway 36 threshold is displaced 347 feet.
2- For Airport Advisory Service contact UNICOM on the frequency of 122.8 MHz.
3- Aircraft and powerplant maintenance is not available.
4- The airport elevation is 2,620 feet MSL.

287. Refer to the Airport/Facility Directory data on the adjacent page for Grider Field at Pine Bluff. Which statement is true?

J21
1- The control tower is in operation 24 hours of each day.
2- There is a rotating beacon at this airport.
3- The VORTAC facility is located on the airport.
4- Grade 115 gasoline is available.

288. Refer to the Airport/Facility Directory data for Jonesboro Airport on the adjacent page, and select the true statement.

J21
1- UNICOM is the only communications facility on the airport.
2- The BVOR station is located on the airport.
3- Major airframe and major powerplant repairs are available.
4- The full length of Runway 32 is available for takeoffs and landings.

289. Refer to the Airport/Facility Directory data to the left for Adams Field at Little Rock and select the true statement.

J21
1- Runway 35 threshold is displaced 365 feet.
2- Low pressure oxygen replacement bottles are available.
3- Grade 115 gasoline is available.
4- The longest hard-surfaced runway available for takeoffs is Runway 22.

290. Refer to the Airport/Facility Directory data to the left. Select the true statement concerning Grider Airport at Pine Bluff.

J21
1- Maintenance service includes only minor airframe and minor powerplant repairs.
2- The VORTAC facility is located on the airport.
3- VASI lights are available for the approach to Runway 17.
4- The location of the airport in relation to the city of Pine Bluff is not indicated.

291. Refer to the Airport/Facility Directory data to the left. Concerning Adams Field at Little Rock, which statement is true?

J21
1- The airport elevation is 1,700 feet.
2- The airport has a rotating beacon in operation from dusk to dawn.
3- Runway 35 has a Visual Approach Slope Indicator (VASI).
4- The full length of Runway 17 is available for takeoffs and landings.

292. Refer to the Airport/Facility Directory data to the left for Adams Field at Little Rock. The proper sequence of radio frequencies for departing this airport southbound using ATIS, ground control, tower, departure control, and the Flight Service Station is

J23
1- 125.6, 124.2, 121.9, 118.1, and 122.35 MHz.
2- 123.0, 121.7, 118.7, 124.2, and 113.9 MHz.
3- 125.6, 121.9, 118.7, 124.2, and 122.2 MHz.
4- 124.2, 123.85, 121.9, 119.5, and 122.55 MHz.

293. Refer to the Airport/Facility Directory data to the left for Adams Field at Little Rock. When arriving from the southeast, the proper sequence of radio frequencies to use for ATIS, approach control, tower, and ground control is

J23
1- 125.6, 119.5, 118.7, 123.85 MHz.
2- 123.0, 113.9, 118.7, 124.2 MHz.
3- 125.6, 124.2, 118.7, 121.9 MHz.
4- 122.2, 119.5, 113.9, 123.0 MHz.

287-484 O - 79 - 5

NOTICES TO AIRMEN

THIS SECTION CONTAINS NOTICES TO AIRMEN THAT ARE EXPECTED TO REMAIN IN EFFECT FOR AT LEAST SEVEN DAYS.
NOTE: NOTICES ARE ARRANGED IN ALPHABETICAL ORDER BY STATE (AND WITHIN STATE BY CITY OR LOCALITY). NEW OR REVISED DATA. NEW OR REVISED DATA ARE INDICATED BY BOLD ITALICIZING THE AIRPORT NAME.
NOTE: ALL TIMES ARE LOCAL UNLESS OTHERWISE INDICATED.

WEST VIRGINIA

BECKLEY, RALEIGH COUNTY MEML ARPT: MIRL rwy 1-19 6700 ft x 150 ft asphalt cmsnd. ILS LOM unusable beyond 10 NM below 6000 ft. Threshold rwy 1 dspled 650 ft. (1/78)

BERKELEY SPRINGS POTOMAC AIRPARK: Twr 80 ft (AGL) located 900 ft W of apch end rwy 11 unmarked and unlighted. (6/76)

BLUEFIELD, MERCER COUNTY ARPT: ILS LOC rwy 23 OTS. (1/78)

CHARLESTON HUMMINGBIRD HELIPORT: Arpt closed.

LEWISBURG: CTLZ hours 0900-2100 daily. (2/78-3)

MARTINSBURG, EASTERN WEST VIRGINIA REGIONAL ARPT: Rwy 17-35 closed. (3/78)

MOUNDSVILLE MARSHALL COUNTY ARPT: Arpt open days VFR only. (11/77)

NEW CUMBERLAND, HERRON ARPT: TPA 775 ft. (11/77-2)

NEW MARTINSVILLE CIVIL AIR PATROL ARPT: TPA 1800 ft. (12/77-2)

WHEELING OHIO CO ARPT: 1570 ft chimney under const 3-1/2 NNW arpt lighted. (3/78-3) (3/78-3)

WYOMING

SPECIAL NOTICE: Coal mine blasting surface to 1000 ft AGL, 27 NM NNE of Sheridan. Blasting will continue indefinitely. (10/74)

SPECIAL NOTICE-YELLOWSTONE NATIONAL PARKS: Due to increasing low level flights over national parks, pilots are requested to maintain 2000 ft AGL when transiting Yellowstone National Parks unless aircraft capability is exceeded. (9/72)

CHEYENNE MUNI ARPT: Rwy lights rwy 16-34 OTS 2400-0600 daily. (1/78-3)

CODY MUNI ARPT: Tower 141 ft AGL 1320 ft NE apch end rwy 22. (1/78)

COWLEY/LOVEL/BYRON/BIG HORN COUNTY ARPT: VASI rwy 9 and rwy 27 cmsnd, for VASI key freq 122.8 5 times. UNICOM freq 122.8 cmsnd. Rotating beacon RTS. MIRL rwy 9-27 cmsnd, for rwy lights key freq 122.8 5 times. (10/77-2)

EVANSTON MUNI ARPT: Rwy lights 16-34 dcmsnd. (11/77-2)

LARAMIE, GENERAL BREES FIELD: VASI rwy 30 cmsnd. (2/78-2)

RIVERTON REGIONAL ARPT: VASI rwy 28 cmsnd. Rwy 10-28 now 8200 ft, HIRL cmsnd. Rwy 10-28 wt brg capacity S -85000 lbs, D -110000 lbs, DT -165000 lbs. VASI rwy 10 cmsnd. Rwy 16-34 now 1000 ft. (3/78-2)

NOTE: The last page of this test book contains a list of ABBREVIATIONS.

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294. Refer to the NOTAMS to the left. Select the true statement concerning an airport in West Virginia.

J25
1- At Lewisburg the control zone operating hours are from 0700 - 2100Z.
2- At Wheeling Ohio County Airport there is a lighted chimney under construction north-northwest of the airport.
3- At Raleigh County Memorial Airport, Beckley, the threshold for Runway 17 is displaced 650 feet.
4- At Herron Airport, New Cumberland, the traffic pattern altitude is 1,000 feet.

295. Refer to the NOTAMS to the left. Select the true statement about an airport in West Virginia or Wyoming.

J25
1- At Riverton Regional Airport in Wyoming, the runway lights for Runway 28 are out of service.
2- The Eastern West Virginia Regional Airport at Martinsburg is closed.
3- At Cody Municipal Airport in Wyoming, there is a tower located on the approach end of Runway 22.
4- At Mercer County Airport, Bluefield, W. Va., the threshold of Runway 23 is displaced 450 feet.

296. Refer to the NOTAMS to the left for Wyoming and select the true statement.

J25
1- Coal mine blasting may be in progress 27 nautical miles NNE of Sheridan.
2- At Yellowstone Natl. Parks, pilots flying over these parks must maintain at least 1,000 feet AGL.
3- At Riverton Regional Airport the runway lights for Runway 10 are out of service.
4- At Cheyenne Municipal Airport, Runway 16-34 is closed.

297. Refer to the NOTAMS to the left and select the true statement.

J25
1- At Herron Airport, New Cumberland, W. Va., the traffic pattern altitude is 775 feet.
2- At Cody Airport, Wyo., the threshold of Runway 22 is displaced 141 feet.
3- Coal mine blasting from the surface to 1,000 feet AGL is in progress NNE of Laramie, Wyo.
4- At Wheeling Ohio County Airport, W. Va., there is an unlighted chimney under construction NNW of the airport.

298. Refer to the NOTAMS to the right. Select the true statement about an airport in the state of New Jersey.

J25
1- The full length of Runway 22 is available for landings at Manahawkin Airport.

2- Automatic Terminal Information Service is available at Teterboro Airport.

3- Runway 5-23 is closed at the Wildwood, Cape May County Airport.

4- At Morristown Muni. Airport the runway lights are in service between midnight and 3:00 AM.

299. Refer to the NOTAMS to the right. Select the true statement about an airport in the state of Nebraska.

J25
1- At Brule, Beals Airport, runway lights are available.

2- The facilities and services at Palisade, Rich Field, are no longer available; however, the runways may be used for takeoffs and landings.

3- At Trenton Muni. Airport the full length of Runway 19 may be used for takeoffs and landings.

4- Bruning Hawks Field has an operating control tower on the frequency 122.8 MHz.

300. Refer to the NOTAMS to the right. Select the true statement concerning an airport in Nevada or New Hampshire.

J25
1- The Manchester VORTAC (in New Hampshire) frequency was changed to 124.4 MHz in January of 1977.

2- The Ely Airport/Yelland Field, Nevada, runway lights may be activated by use of the UNICOM frequency 122.8 MHz.

3- The Boulder City Muni. Airport in Nevada is closed to airplane traffic from 0800-1700 on Tuesdays and Sundays.

4- Goffstown Country Club Air Park, N.H., now has a 1,600-foot displaced threshold on the north-south runway.

301. Refer to the NOTAMS to the right. Select the true statement about an airport in the state of New Jersey.

J25
1- At Belmar-Farmingdale, Monmouth County Airport, the length of Runway 32 is 5,500 feet.

2- At Morristown Muni. Airport, runway lights are available for use on Runway 12-30.

3- At Pittstown Alexandria Airport, the threshold for Runway 8 is displaced 120 feet.

4- Runway 22 at Albion Airport is closed.

NOTICES TO AIRMEN

INFORMATION CURRENT AS OF

THIS SECTION CONTAINS NOTICES TO AIRMEN THAT ARE EXPECTED TO REMAIN IN EFFECT FOR AT LEAST SEVEN DAYS.
NOTE: NOTICES ARE ARRANGED IN ALPHABETICAL ORDER BY STATE (AND WITHIN STATE BY CITY OR LOCALITY).
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NOTE: ALL TIMES ARE LOCAL UNLESS OTHERWISE INDICATED.

NEBRASKA

AINSWORTH MUNI ARPT: Rwy 6-24 closed permly. Rwy 12-30 now 5500 ft x 90 ft. Rwy 17-35 now 6800 ft. (12/76-2) (12/76-2)
BRULE, BEALS ARPT: For rwy lights rwy 8-26 key freq 121.7. (10/76-2)
BRUNING HAWKS FIELD: UNICOM freq 122.8. (10/76-2)
CHADRON MUNI ARPT: VASI rwy 20 cmsnd. (11/76-2)
COLUMBUS MUNI ARPT: VASI rwy 14 cmsnd. (1/77-2)
ELLSWORTH, BACKWARD H ARPT: Arpt closed permly.
MCCOOK MUNI ARPT: Rwy 3-21 closed. (11/76-2)
NELIGH ANTELOPE COUNTY ARPT: UNICOM freq 122.8 cmsnd. (9/76-3)
NORTH LOUP HELIPORT: Helipad 16 ft x 16 ft concrete. (12/76-3)
PALISADE, RICH FIELD: Arpt closed permly. (1/77-3)
SUPERIOR MUNI ARPT: Rwy 14-32 3700 ft x 60 ft asphalt, low intensity rwy lights cmsnd. (10/76-2)
TECUMSEH MUNICIPAL ARPT: Rotating beacon cmsnd. (10/76-2)
TRENTON MUNICIPAL ARPT: Threshold rwy 19 dsplcd 200 ft. (11/76-2)

NEVADA

BOULDER CITY MUNI ARPT: Glider operations near arpt 0800-1700 Tues-Sun sfc to 6500 ft MSL. (1/77-2)
ELY ARPT/YELLAND FLD: For rwy lights rwy 18-36 key freq 122.8 5 times in 5 seconds 2100-0530. (12/76-2)

NEW HAMPSHIRE

GOFFSTOWN COUNTY CLUB AIR PARK: Rwy N-S now 1600 ft. (10/76-2)
MANCHESTER: VORTAC OTS until Jan 21, 1977 for freq change to 114.4. (12/76)
WOLFBORO, LAKE REGION ARPT: For rwy lights key freq 123.0 5 times in 5 seconds. (11/76-2)

NEW JERSEY

ALBION ARPT: First 600 ft rwy 22 closed. (2/75)
BELMAR-FARMINGDALE, MONMOUTH COUNTY ARPT: Rwy 14-32 now 5500 ft. (12/76-2)
MANAHAWKIN ARPT: Threshold rwy 22 dsplcd 390 ft. (9/76-2)
MORRISTOWN MUNI ARPT: Rwy lights 12-30 OTS. (6/76)
PITTSTOWN ALEXANDRIA ARPT: For rwy lights rwy 8-26 key 121.8 for 3 seconds, lights stay on for 17 minutes. Rwy 8-26 2400 ft x 120 ft asphalt/turf.
TETERBORO: FSS Fast file recorded IFR Flight Plan filing service call: Teterboro: 201-288-6437 or 201-288-6436 Newark: 201-624-5352 or 201-624-5353 Morristown: 201-539-1581 Caldwell: 201-226-7077 LaGuardia: 212-898-2323 or 212-898-2339 Rockland County: 914-352-2569
TETERBORO ARPT: ATIS freq 114.2 cmsnd. (12/76-3)
WEST CREEK, EAGLES NEST ARPT: Arpt closed. (3/75)
WEST MILFORD NAIROBI ARPT: Rwy 2 closed landing nights. (10/76-2)
WILDWOOD, CAPE MAY COUNTY: S 600 ft rwy 5-23 closed. Rwy 10-28 closed nights until Feb 1977. HIRL rwy 1-19 cmsnd. (12/76-2)

NOTE: The last page of this test book contains a list of ABBREVIATIONS.

RESTRICTIONS TO ENROUTE NAVIGATION AIDS

Radio Facility Restrictions are cited until cancelled by the Associated Station. Restricted areas are defined in degrees from magnetic North.

COLORADO

ALAMOSA VORTAC: Unusable beyond 25 NM below 15,900' AMSL 025-045° beyond 35 NM below 11,000' AMSL 150-180°.

COLORADO SPRINGS VORTAC: Unusable beyond 30 NM below 15,600' MSL 200-300°; beyond 20 NM below 9,500' MSL 300-040°.

CORTEZ VOR: Unusable beyond 20 NM below 11,500' AMSL 210-230°.

FRUITA NDB: Usable for approaches and transition to approaches only, due to excessive needle oscillations on most bearings beyond 10 NM.

MONTROSE VOR: Unusable 200-240° below 11,000' MSL beyond 35 NM.

Excerpts

WYOMING

CASPER VORTAC: Operg with momentary cross pointer excursion on V-85 20-25 nmi S at and above MEA.

CODY VOR: Unusable beyond 12 NM below 8000' MSL 040-100°.

DUNOIR VORTAC: Restricted to awy rad use only.

JACKSON VOR: Restricted to airway, holding and apch use only.

LARAMIE VORTAC: Unusable beyond 27 nmi 100-240° below 11,000', 240-285° below 12,500'; beyond 15 nmi 015-140° below 9,000'.

SHERIDAN VORTAC: Unusable beyond 30 NM below 14,700' MSL 100-200°; beyond 30 NM below 12,400' MSL 200-270°

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302. Refer to the excerpts above. Which one of the following statements is true?

J28
1- Montrose VOR is unusable in all directions above 11,600 feet MSL beyond 35 nautical miles.
2- There are no restrictions listed for approaching the Cody VOR from the west.
3- The Fruita nondirectional radiobeacon can be used for navigational purposes 50 miles from the station.
4- Laramie VORTAC can be used for navigational purposes beyond 27 nautical miles on all radials below 6,000 feet MSL.

303. Refer to the excerpts above. Which statement is true?

J28
1- Cortez VOR is unusable for navigational purposes within 20 nautical miles of the VOR above 11,500 feet MSL.
2- Cody VOR is unusable for navigational purposes above 8,000 feet MSL.
3- There are no restrictions listed for proceeding inbound to Cody VOR on the 270 radial.
4- Montrose VOR is unusable in all directions above 11,600 feet MSL beyond 35 nautical miles.

304. Refer to the excerpts to the left. Which statement is true?

J28
1- Montrose VOR is unusable beyond 12 nautical miles between 080° and 140° below 9,000 feet.
2- There are no restrictions listed for Cortez VOR.
3- Laramie VORTAC is unusable beyond 15 nautical miles between 015° and 140° below 9,000 feet.
4- Casper VORTAC is unusable on all radials above minimum enroute altitudes.

305. Refer to the excerpts to the left. Which statement is true?

J28
1- There are no restrictions listed for Cortez VOR.
2- Laramie VORTAC has a restriction that concerns using the 150 radial above 12,500 feet and beyond 27 statute miles.
3- At the Montrose VOR there are no restrictions listed that would involve use of the 220 radial.
4- Inbound to the Alamosa VORTAC on the 170 radial at 9,500 feet MSL and within 50 nautical miles, you would probably find this facility unusable.

306. Refer to the excerpts to the left above. Which statement is true?

J28
1- There are no restrictions listed for Cortez VOR.
2- The Fruita nondirectional radiobeacon can be used for navigational purposes 50 miles from the station.
3- There are no restrictions listed for approaching Montrose VOR from the north beyond 35 nautical miles.
4- The Sheridan VORTAC 160-200 radials are usable beyond 30 nautical miles below 8,000 feet MSL.

307. Refer to the excerpts to the left above. Which statement is true?

J28
1- The Sheridan VORTAC 160-200 radials are usable beyond 30 nautical miles below 8,000 feet MSL.
2- Cortez VOR has restrictions listed that would concern the use of the 220 radial if you were inbound to the station at 7,500 feet MSL.
3- The 090 radial of Laramie VORTAC is unusable within 15 nautical miles above 9,000 feet MSL.
4- The Colorado Springs VORTAC 140 radial is unusable beyond 30 nautical miles above 9,000 feet MSL.

RESTRICTIONS TO ENROUTE NAVIGATION AIDS

Radio Facility Restrictions are cited until cancelled by the Associated Station. Restricted areas are defined in degrees from magnetic North.

EXCERPTS

MARYLAND

ANDREWS VORTAC: VOR portion unusable beyond 10 NM 120-180° below 1500' and beyond 10 NM 330-030° all altitudes

MIDDLE RIVER VOR: Unusable 045-075° beyond 15 NM below 10,000'; 125-170° and 325-340° beyond 15 NM below 10,000' MSL.

PATUXENT RIVER VORTAC: VOR portion unusable below 1500' MSL beyond 35 mi 245-300°.

SNOW HILL VORTAC: VOR portion unusable below 1400' MSL beyond 15 nmi 210-225°, below 1500' MSL beyond 10 nmi 225-265°, below 9000' MSL beyond 30 nmi 225-265°, below 1500' MSL beyond 20 nmi 265-005°, below 1500' MSL beyond 25 nmi 005-020°, below 1700' MSL beyond 20 nmi 020-040°.

WESTMINSTER VORTAC: VOR unusable on 284-292° rad beyond 28 mi above 14,500', 255° rad beyond 15 NM above 14,500'.

MASSACHUSETTS

BARNES VORTAC: Unusable 080-100° beyond 20 NM below 4000' MSL. VOR portion unusable 270-320° beyond 35 NM below 4000' MSL.

BOSTON VORTAC: VOR portion unusable 020-040° beyond 65 nmi above 14,500' MSL; 360-020° beyond 10 nmi below 14,500' MSL; 020-045° beyond 22 nmi below 3500' MSL; 020-045° beyond 26 nmi below 4500' MSL; 020-045° beyond 28 nmi below 5500' MSL; 020-045° beyond 32 nmi below 7500' MSL; 045-360° beyond 26 nmi below 3000' MSL.

FITCHBURG NDB: H facility unusable 040-160° beyond 18 nmi.

ORANGE NDB: H fac unusable below 5000' beyond 20 NM.

WHITMAN VOR/DME: Unusable 090-240° beyond 35 NM below 3000'; 240-090° beyond [redacted] NM below 3500'.

MICHIGAN

ALPENA VORTAC: DME portion unusable 260° to 280° below 4000' MSL beyond 30 nmi.

FLINT VORTAC: VOR portion unusable between 300-320° beyond 10 NM below 10,000' MSL.

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308. Refer to the excerpts above and select the true statement.

J28
1- The Middle River VOR is unusable on all radials beyond 15 nautical miles below 10,000 feet MSL.
2- The Orange nondirectional radiobeacon is usable for navigational purposes at 4,500 feet MSL 30 nautical miles from the facility.
3- The 290 radial of Westminster VORTAC (VOR portion) is unusable beyond 28 nautical miles above 14,500 feet MSL.
4- The Barnes VORTAC (VOR portion) 230 radial is unusable beyond 15 nautical miles at 4,500 feet MSL.

309. Refer to the excerpts to the left for Maryland. Which statement is true?

J28
1- Westminster VORTAC is unusable on all radials beyond 28 nautical miles.
2- Patuxent River VORTAC has a restriction that concerns using the 240 radial above 2,000 feet and beyond 35 statute miles.
3- There are no restrictions listed for proceeding inbound to the Middle River VOR on the 180 radial.
4- Andrews VORTAC can be used for navigational purposes beyond 10 nautical miles on the 180 radial below 1,000 feet MSL.

310. Refer to the excerpts to the left. Which one of the following statements is true?

J28
1- Flint VORTAC (VOR portion) is unusable on the 305 radial at 20 nautical miles and an altitude of 6,500 feet MSL.
2- The Fitchburg nondirectional radiobeacon is unusable in all directions from the facility beyond 18 nautical miles.
3- The Whitman VOR/DME 090-240 radials are usable beyond 35 nautical miles below 3,000 feet MSL.
4- Patuxent River VORTAC (VOR portion) is unusable below 1,500 feet MSL beyond 35 miles on the 125 radial.

311. Refer to the excerpts to the left above. Which statement is true?

J28
1- The Fitchburg nondirectional radiobeacon is usable on a magnetic bearing of 100° within 10 nautical miles of the station.
2- The Andrews VORTAC (VOR portion) 120-180 radials are unusable 10 nautical miles from the facility at all altitudes.
3- There are no restrictions listed for approaching Patuxent River VORTAC from the west below 1,500 feet MSL.
4- Flint VORTAC (VOR portion) is usable only on the 300-320 radials beyond 10 nautical miles below 10,000 feet MSL.

VOR RECEIVER CHECK POINTS
VOR/VORTAC

The list of VOR airborne and ground check points are included in this section. Use of these check points is explained in Aeronautical Information Manual Basic Flight Information and ATC Procedures

NOTE: Under column headed "Type Check Pt (Ind AB ALT)" G stands for ground, A stands for airborne followed by a number (1,000) indicating the altitude above mean sea level at which the check should be conducted. Facilities are listed in alphabetical order in the state where the check points are located.

EXCERPTS

Facility Name (arpt name)	Freq/Ident	Type Check Pt Gnd AB ALT	Azimuth from Fac Mag	Dist from Fac N M	Check Point Description
NORTH DAKOTA					
Bismarck (Muni Arpt)	116.5/BIS	G	275	4.2	N end ramp area just off apch end rwy 13
Devils Lake	111.0/DVL	A/3000	074	5.0	Over rdo antenna
Dickinson (Muni Arpt)	112.9/DIK	G	182	8.7	Int of E/W twy and N/S twy
Fargo (Hector Fld)	116.2/FAR	A/2000	300	9.4	Over apch end rwy 35
Grand Forks (International Arpt)	109.4/GFK	G	157	1.8	S end of twy parallel to rwy 35
Jamestown (Muni Arpt)	114.5/JMS	G	200	0.6	Twy strip adj to rwy 03
Minot	117.1/MOT	A/2800	091	6.5	Over RR and highway overpass
Williston (Sloulin Fld)	116.3/ISN	A/3000	121	6.2	Over apch end rwy 11
SOUTH DAKOTA					
Aberdeen	113.0/ABR	A/2500	278	7.5	Over grain elev
Brookings	108.8/BKX	A/3000	070	7.5	Over grain elev
Mitchell	109.2/MHE	A/2500	239	10	Over RR and hwy int SW corner of city
Phillip	108.4/PHP	A/3900	156	5.0	Over 2712' twr
Rapid City (Regional Arpt)	112.3/RAP	G	320	4.5	In front of Admin Bldg adj to center twy
Sioux Falls (Joe Foss Fld)	115.0/FSD	G	155	4.7	On W end of Air Ntl Guard parking ramp
	115.0/FSD	G	145	4.4	On E edge of E/W txwy to Gen. Aviation parking ramp
Watertown (Muni Arpt)	116.6/ATY	G	184	3.8	SE corner of term ramp
Winner (Muni Arpt)	112.8/ISD	A/3000	200	8	Over blue water tower S edge of town
Yankton (Chan Gurney Muni Arpt)	111.4/YKN	A/2500	257	6.8	Over twr
WYOMING					
Boysen Reservoir	117.8/BOY	A/6500	180	25	Over Riverton VOR
Casper (Air Trml)	116.2/CPR	A/6400	201	18	Over intersection rwys 21 25-30
Cherokee (Rawlins Muni Arpt)	112.2/CKW	A/7800	065	17	Over FSS bldg
Gillette (Gillette-Campbell County Arpt)	112.5/GCC	G	147	0.7	Runup pad for rwy 33
Laramie (Brees Field)	117.6/LAR	A/8800	112	6.5	Over smoke stack of cement factory
Rock Springs (Sweetwater Co. Arpt)	114.7/RKS	G	200	1.9	In center of turn-around E end rwy 25
	114.7/RKS	G	261	3.1	In center of turn-around W end rwy 07
Sheridan (County Arpt)	115.3/SHR	A/5000	122	5	Over center of apch end rwy 13

312. Refer to the excerpts above. Which one of the following statements is true concerning VOR Receiver Checkpoints?

J29

1- At Sheridan County Airport, Wyo., a ground checkpoint is located 5 nautical miles from the facility at the center of the approach end of Runway 13.

2- At Rock Springs, Wyo., there are two ground checkpoints located on the Sweetwater County Airport.

3- The airborne checkpoint at Watertown Muni. Airport in S. Dak., utilizes the 184 radial and it is located 8 nautical miles from the airport.

4- In Sioux Falls, S. Dak., there is an airborne checkpoint at Joe Foss Field on the west end of the Air National Guard parking ramp.

313. Refer to the excerpts above. Which one of the following statements is true concerning VOR Receiver Checkpoints?

J29

1- In Rock Springs, Wyo., there is an airborne checkpoint located over Sweetwater County Airport 1.9 miles from the facility in the center of turn-around east end of Runway 25.

2- At Yankton, S. Dak., the airborne checkpoint is located 6.8 nautical miles from the facility.

3- At Joe Foss Field in Sioux Falls, S. Dak., there are both ground and airborne checkpoints.

4- At Mitchell, S. Dak., a ground checkpoint is located 10 nautical miles from the facility on a magnetic bearing of 239°.

314. Refer to the excerpts to the left. Which statement is true concerning VOR Receiver Checkpoints?

J29
1- At Rapid City, S. Dak. Regional Airport there is an airborne checkpoint on a magnetic bearing of 330° from the station over the south edge of the ramp.
2- The airborne checkpoint at Sheridan, Wyo. County Airport utilizes the 122 radial and Runway 13.
3- Joe Foss Field in Sioux Falls, S. Dak., has both ground and airborne checkpoints.
4- At Rawlins Municipal Airport, Cherokee, Wyo., the ground checkpoint is located on the northwest edge of the ramp.

315. Refer to the excerpts to the left. Which statement is true concerning VOR Receiver Checkpoints?

J29
1- There is an airborne checkpoint listed for Sweetwater Co. Airport, Rock Springs, Wyo., on the east end of Runway 25.
2- There are both ground and airborne checkpoints listed for Aberdeen, S. Dak.
3- There are two ground checkpoints listed for Joe Foss Field at Sioux Falls, S. Dak.
4- There is an airborne checkpoint at Bismarck Muni. Airport, N. Dak., on a magnetic bearing of 275° to the station.

316. Refer to the excerpts on the adjacent page. Which statement is true concerning VOR Receiver Checkpoints?

J29
1- The Laramie (Brees Field), Wyo., airborne checkpoint is located 6.5 nautical miles from the station.
2- There is an airborne checkpoint listed for Sweetwater Co. Airport, Rock Springs, Wyo., on the east end of Runway 25.
3- The Mitchell, S. Dak., airborne checkpoint is located northeast of the station over the city of Mt. Vernon.
4- There are both ground and airborne checkpoints listed for Aberdeen, S. Dak.

317. Refer to the excerpts on the preceding page. Which statement is true concerning VOR Receiver Checkpoints?

J29
1- Phillip, S. Dak., has a ground check point located on a magnetic bearing of 156° from the station that is on the ramp in front of the control tower.
2- Joe Foss Field, Sioux Falls, S. Dak., has two airborne checkpoints.
3- Sweetwater Co. Airport, Rock Springs, Wyo., has two ground checkpoints.
4- Brees Field, Laramie, Wyo., airborne checkpoint is located on a magnetic bearing of 122°, 6.5 miles from the airport.

318. Information concerning parachute jumping sites may be found in

J30
1- Graphic Notices and Supplemental Data.
2- The legend of Sectional Aeronautical Charts only.
3- Advisory Circulars.
4- Notices to Airmen (NOTAMS).

319. To determine the location of reported parachute jumping sites, you should refer to

J30
1- Federal Aviation Regulations, Part 91.
2- National Transportation Safety Board regulation, Part 830.
3- Graphic Notices and Supplemental Data.
4- Federal Aviation Regulations, Part 105.

320. Select the true statement concerning wind circulation associated with pressure systems in the northern hemisphere, as shown on a Surface Weather Map.

K01
1- Wind circulates counterclockwise around high pressure areas and clockwise around low pressure areas.
2- Wind circulates clockwise around high pressure areas and counterclockwise around low pressure areas.
3- Wind circulates counterclockwise around both high pressure and low pressure areas.
4- Wind circulates clockwise around both low pressure and high pressure areas.

321. Refer to the Surface Weather Map below. Concerning wind circulation associated with the high and low pressure areas shown, select the true statement.

KOI
1- Wind flows across both high and low pressure areas paralleling isobars.
2- Wind flows outward from high pressure areas and inward to low pressure areas, crossing isobars at an angle.
3- Wind flows outward in both high and low pressure areas, crossing isobars at an angle.
4- Wind flows inward to high pressure areas and outward from low pressure areas, crossing isobars at an angle.

322. Refer to the Surface Weather Map below. The front that extends from a low pressure area southward along the southeastern coast of the United States is known as

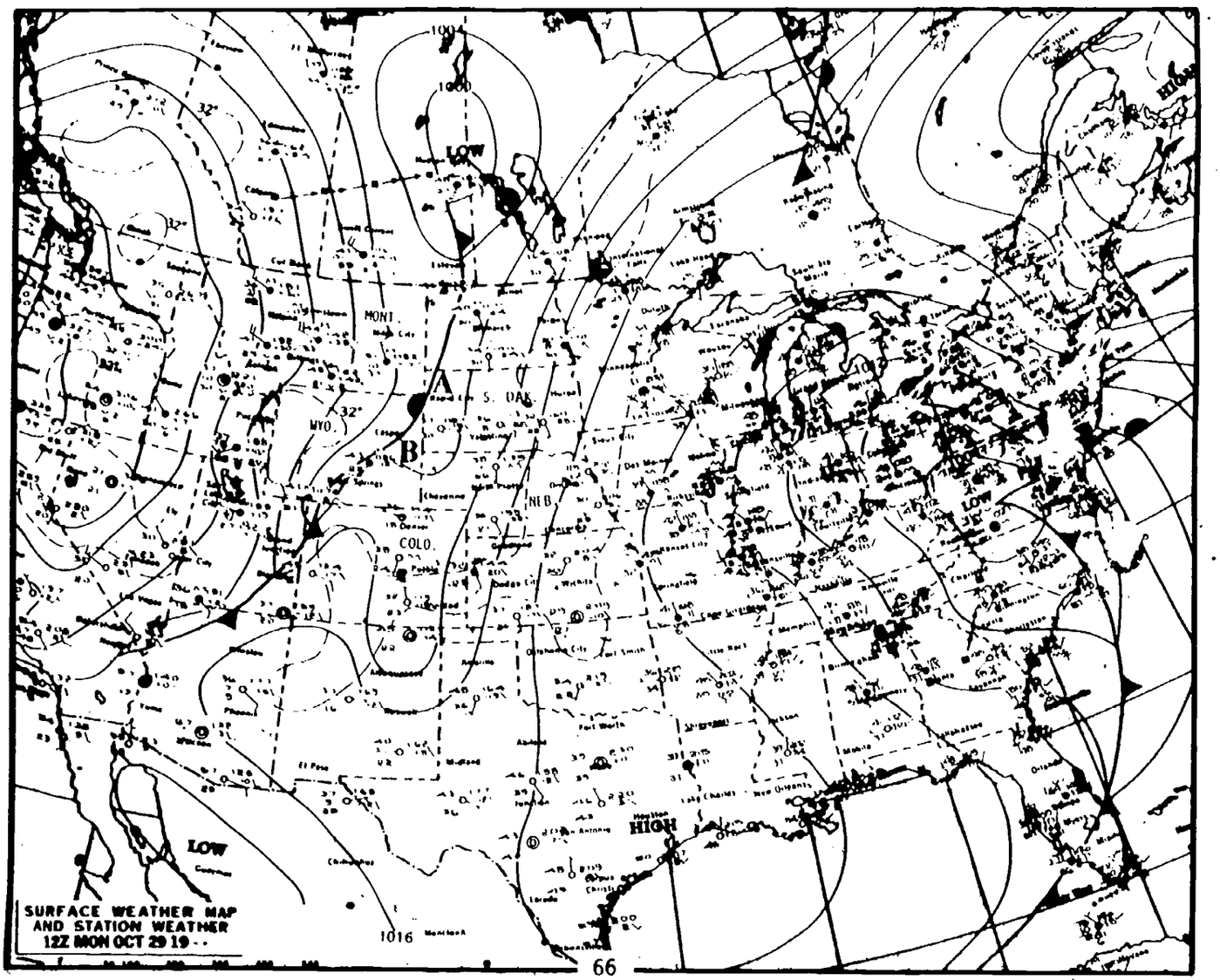
KOI
1- a stationary front.
2- a warm front.
3- an occlusion.
4- a cold front.

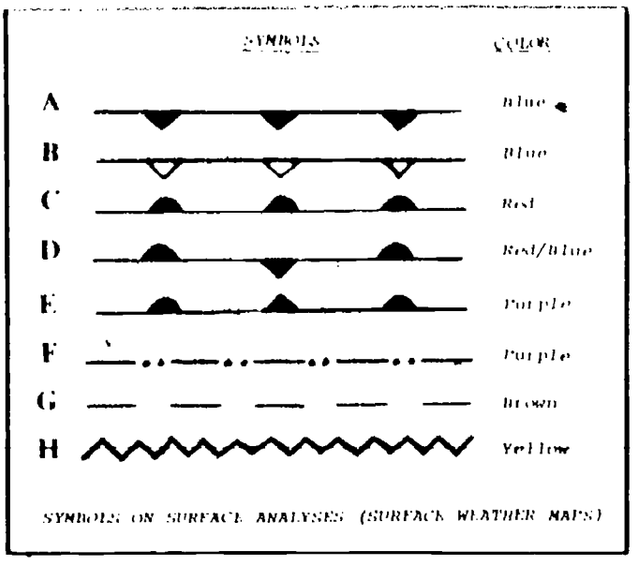
323. The information depicted on Surface Weather Maps (such as shown below) that should be of greatest value to you as a pilot, is the

KOI
1- speed and direction of surface winds and winds aloft.
2- location of icing, turbulence, and thunderstorms.
3- amount, type, and intensity of cloud formations.
4- pressure patterns and the surface location of fronts.

324. The weather information depicted on the Surface Weather Map below indicates

KOI
1- air circulation around the low pressure area in Canada is clockwise.
2- after the front has passed through the state of Wyoming the surface winds should be from the south.
3- the front located in the eastern half of Wyoming should move northwesterly out of the state.
4- the front appears to have little or no movement in the vicinity of Rapid City and Casper (points A and B).





SYMBOLS ON SURFACE ANALYSES (SURFACE WEATHER MAPS)

325. Refer to the illustration above. The symbol associated with a warm front is

KOI
1- A.
2- B.
3- C.
4- D.

326. Refer to the weather symbols above. Weather conditions associated with symbol "F" are:

KOI
1- An area of thundershowers.
2- Rain, drizzle, and fog.
3- Stratiform clouds and haze.
4- A line of active thunderstorms.

327. Refer to the illustration above. Which symbol indicates a narrow band of active thunderstorms that developed ahead of a cold front?

KOI
1- D.
2- E.
3- F.
4- G.

328. Refer to the weather symbols above. Select the symbol which represents a stationary front.

KOI
1- A.
2- D.
3- E.
4- F.

329. Refer to the weather symbols above. Which symbol depicts the leading edge of cold air overtaking and replacing warmer air at the surface?

KOI
1- A.
2- C.
3- D.
4- E.

330. Refer to the symbols to the left. The three principal types of fronts are the cold front, the warm front, and the stationary front. Which of the following symbols are properly identified?

KOI
1- A- warm front; B- stationary front; E- cold front.
2- B- cold front; D- warm front; E- stationary front.
3- A- cold front; C- warm front; D- stationary front.
4- C- cold front; D- warm front; E- stationary front.

331. Which symbol shown to the left depicts a squall line?

KOI
1- D.
2- E.
3- F.
4- G.

332. Which symbol illustrated to the left above identifies an occluded front?

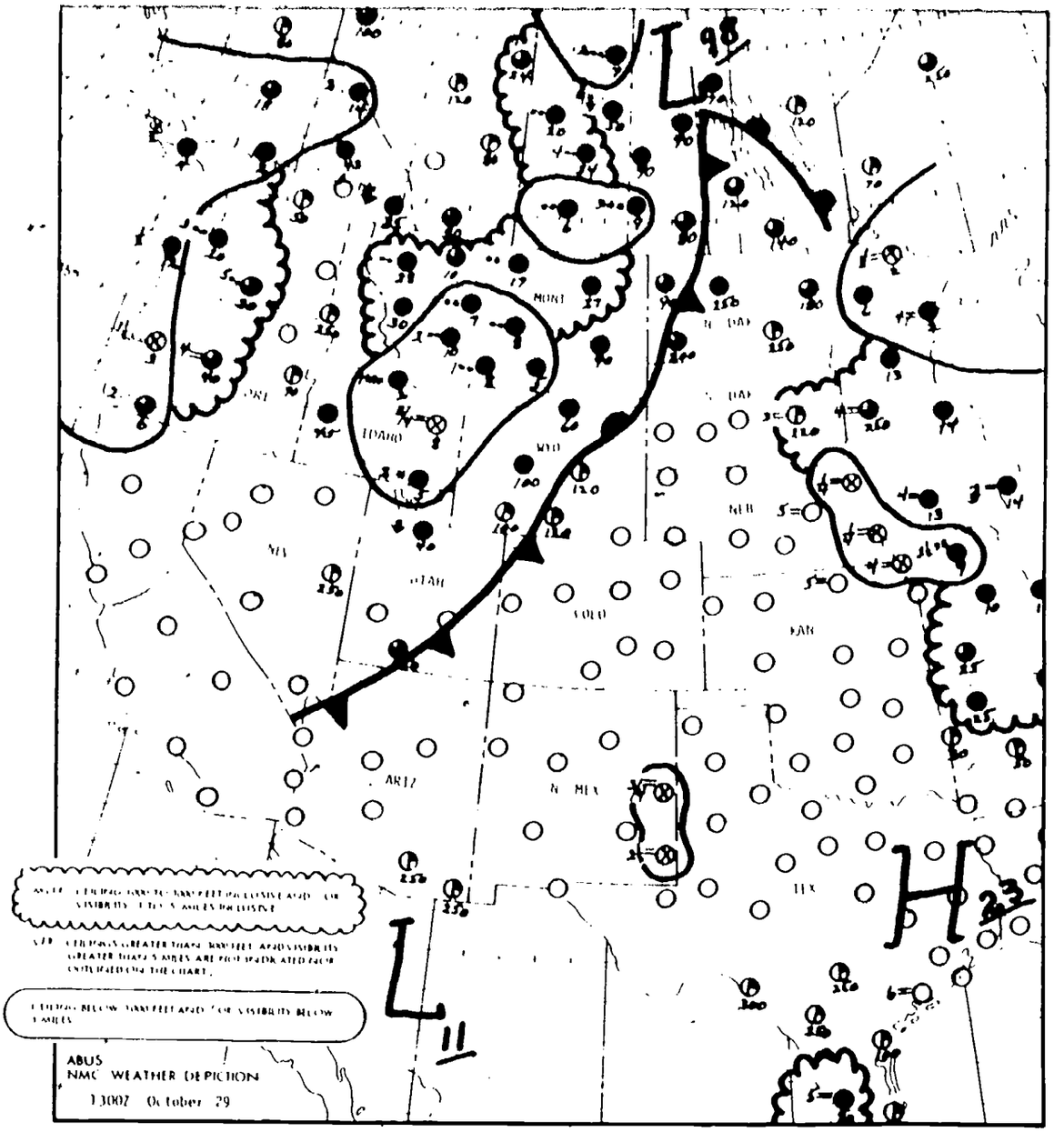
KOI
1- D.
2- E.
3- F.
4- G.

333. Refer to the symbols to the left above. If symbol "C" is shown on a Surface Weather Map, it indicates that

KOI
1- a cold air mass has caught up with a warm air mass and the air masses have closed together to form an occluded front.
2- a cold air mass is overtaking and replacing a warm air mass.
3- neither a cold air mass nor a warm air mass is being replaced and the front is stationary.
4- a warm air mass is moving in and replacing colder air.

334. The principal value of the Surface Analysis (Surface Weather Map) is that such a map

KOI
1- provides a means of locating pressure systems and fronts and an overview of winds and temperature.
2- enables the pilot to forecast weather conditions along the intended route of flight.
3- shows the amount, type, and intensity of cloud formations and the speed and direction of surface winds.
4- enables the pilot to accurately forecast weather conditions at the destination airport.



335. When using a Weather Depiction Chart as shown above, you should know that the

KO2
1- smooth solid lines enclose areas of constant barometric pressure.
2- smooth solid lines enclose areas containing weather that was below VFR minimums for controlled airspace.
3- scalloped lines enclose areas where the ceiling is below 1,000 feet and the visibility is less than 3 miles.
4- scalloped area in Oregon encloses that portion of the state which has an overcast below 1,000 feet.

336. The Weather Depiction Chart above indicates that the weather in extreme northwest Wyoming is

KO2
1- clear skies with unlimited visibilities.
2- marginal VFR.
3- above VFR minimums.
4- below VFR minimums.

337. A Weather Depiction Chart, as shown above, is useful to a pilot in determining

KO2
1- the temperature and dewpoint at selected stations.
2- areas of equal barometric pressure.
3- areas where weather conditions were reported above or below VFR minimums.
4- the forecast areas of cloud cover and precipitation.

338. Areas where takeoffs and landings should not be made under VFR, at the time the chart was drawn, can be noted by referring to which type of weather chart?

KO2
1- Significant Weather Prognostic Chart.
2- Weather Depiction Chart.
3- Density Altitude Chart.
4- Radar Summary Chart.

WINDS AND TEMPERATURES ALOFT FORECAST

FDUS1 KWBC 180545
DATA BASED ON 180000Z

VALID 1812ØØZ FOR USE Ø6ØØ-15ØØZ.. TEMPS NEG ABV 24ØØØ

FT	3ØØØ	6ØØØ	9ØØØ	12ØØØ	18ØØØ	24ØØØ	3ØØØØ	34ØØØ	39ØØØ
BFF		2412+Ø8	2715+Ø4	2523-Ø4	2536-2Ø	2541-32	244544	246755	246862
CZI		2216+Ø8	2619+Ø2	2725-Ø5	2531-23	2447-35	245Ø47	256352	256762
DEN		2609+Ø8	2717+Ø3	2722-Ø5	2639-19	2632-31	253543	236Ø56	236262
RAP		2115+Ø7	2415+Ø3	2429-Ø5	2431-21	2445-33	244745	244854	245561
RKS		2315+Ø8	2517+Ø3	2727-Ø5	2439-2Ø	2647-34	254346	237252	238169

339. A Weather Depiction Chart is useful to a pilot in determining

K02
1- areas of equal barometric pressure.
2- the temperature and dewpoint at selected stations.
3- the forecast areas of cloud cover and precipitation.
4- areas where weather conditions were reported above or below VFR minimums.

340. Which weather chart depicts the conditions forecast for 12 or 24 hours at the valid time of the chart?

K03
1- Radar Summary Chart.
2- Surface Analysis (Surface Weather Map).
3- Low Level Prognostic Chart.
4- Weather Depiction Chart.

341. Select the true statement concerning U.S. Low Level Significant Weather Prognostic Charts.

K03
1- This is a four-panel chart that forecasts the weather for a period of 48 hours.
2- The valid time of the charts corresponds to the time of the plotted observations and they are not forecasts.
3- The charts are designed for use in domestic flight planning to 24,000 feet.
4- These charts do not depict ceiling, visibility, or turbulence.

342. Refer to the excerpts above. The wind for Scottsbluff (BFF) at 9,000 feet is forecast to be from

K06
1- 240° at 12 knots.
2- 270° at 15 knots.
3- 027° at 15 knots with gusts.
4- 270° at 04 knots with gusts.

343. Refer to the excerpts above. The wind for Crazy Woman, Wyo. (CZI), at 6,000 feet is forecast to be from

K06
1- 022° at 16 MPH.
2- 220° at 08 knots with gusts.
3- 220° at 16 knots.
4- 240° at 12 knots with gusts.

344. Refer to the Winds Aloft excerpt above for Rapid City, S. Dak. (RAP). The wind at 9,000 feet is forecast to be from

K06
1- 210° at 15 knots.
2- 024° at 03 knots.
3- 240° at 15 MPH.
4- 240° at 15 knots.

345. In a Winds and Temperatures Aloft Forecast (FD), the wind direction and windspeed are referenced to

K06
1- magnetic north and knots.
2- magnetic north and statute miles per hour.
3- true north and knots.
4- true north and statute miles per hour.

346. Refer to the Winds and Temperatures Aloft Forecast above for Denver (DEN). The wind at 9,000 feet is forecast to be from

K06
1- 270° at 17 knots; temperature 3° C.
2- 027° at 17 knots; temperature 3° F.
3- 271° at 7 knots; temperature 3° C.
4- 260° at 9 knots; temperature 8° C.

347. In decoding a Winds and Temperatures Aloft Forecast, the coded group 9900+00 means

K06
1- winds light and variable, temperature 0° C.
2- wind from 90° at 9 knots, temperature 0° C.
3- there is no forecast of wind and temperature at a prescribed level.
4- wind in excess of 90 knots, temperature 90° F.

348. A Radar Summary Chart helps a pilot in planning a safe flight because it graphically displays a collection of radar reports concerning

K07
1- fog and other obscurations.
2- the intensity and movement of precipitation.
3- clouds and in-flight visibilities.
4- clouds and ceiling heights.

AREA FORECAST
(PLAIN LANGUAGE INTERPRETATION)

MKC FA 291240
13Z MON TO 07Z TUE (0600 MST MON TO 0000 MST TUE)
OTLK 07Z TUE TO 19Z TUE (0000 MST TUE TO 1200 MST TUE)

WYO . . . . . .

HEIGHTS ABOVE SEA LEVEL UNLESS NOTED

FLIGHT PRECAUTIONS RECOMMENDED DUE TO TURBULENCE AND RESTRICTED VISIBILITIES

SYNOPSIS. COLD FRONT AT 11Z (0400 MST) LOCATED FROM NORTHEAST MONTANA THROUGH EXTREME WESTERN WYOMING ACROSS CENTRAL UTAH MOVING TO NORTHWEST WISCONSIN CENTRAL IOWA EASTERN KANSAS BY 19Z (1200 MST) TUESDAY. FRONTAL SYSTEM ACCOMPANIED BY GUSTY NORTHWESTERLY SURFACE WINDS.

SIGNIFICANT CLOUDS AND WEATHER.

WYOMING. 12,000 TO 14,000 BROKEN TO OVERCAST WESTERN AND CENTRAL PORTIONS BY 15Z (0800 MST) WITH CHANCE OF LIGHT SHOWERS. SURFACE WIND 3215G25 WITH FRONTAL PASSAGE CENTRAL AND EASTERN PORTIONS AFTER 13Z (0600 MST). HIGHER MOUNTAINS AND PASSES OBSCURED BY CLOUDS OR SHOWERS WITH MODERATE TO LOCALLY SEVERE TURBULENCE BELOW 16,000. OUTLOOK MARGINAL VFR CENTRAL AND WEST, VFR EAST PORTIONS.

ICING. LOCALLY MODERATE MIXED ICING IN CLOUDS ABOVE FREEZING LEVEL. FREEZING LEVEL 2,500 EASTERN PORTIONS OF FA AREA SLOPING TO 8,000 WYOMING AND COLORADO.

TURBULENCE...MODERATE LOCALLY SEVERE TURBULENCE BELOW 16,000.

349. Which chart would be useful in preflight planning to identify the movement of a thunderstorm cell?

K07
1- Prognostic Chart.
2- Surface Weather Map.
3- Weather Depiction Chart.
4- Radar Summary Chart.

350. What information is provided by the Radar Summary Chart?

K07
1- Areas of clear weather.
2- Lines, cells, and areas of hazardous thunderstorms.
3- Ceilings and precipitation between reporting stations.
4- Areas of cloud cover and fog.

351. Based on the Area Forecast above for the state of Wyoming, you determine that

K07
1- surface winds are forecast to be from 321° at 5 knots with gusts to 25 knots with frontal passage in Wyoming.
2- moderate to severe turbulence is forecast below 16,000 feet in the higher mountains and passes.
3- the ceiling in western and central portions of Wyoming is forecast to be 12,000 to 14,000 feet AGL.
4- a squall line is expected ahead of the cold front.

352. Based on the Tuesday morning outlook in the Area Forecast above for eastern Wyoming, you determine the weather is forecast to be

K08
1- sky obscured by clouds.
2- 12,000 to 14,000-foot ceilings with light rain.
3- marginal VFR.
4- VFR.

353. Based on the Area Forecast above for the state of Wyoming, you determine that

K08
1- in Wyoming east of the front the freezing level is above 12,000 feet.
2- moderate to locally severe turbulence may be experienced in the vicinity of high mountains.
3- clear skies becoming 12,000-foot scattered should prevail over the central and western portions of the state during the forecast period.
4- a cold front was located in the extreme eastern portion of Wyoming at 0400 MST.

354. In Area Forecasts, cloud heights are given in reference to

K08
1- ground level only.
2- density altitude.
3- pressure altitude.
4- sea level or ground level.

SELECTED TERMINAL FORECASTS

FT181094Ø
RAP 181Ø1Ø 1ØØ SCT 25Ø -BKN 1615. 18Z C8Ø BKN 1815.
ØØZ C5Ø BKN 3215. Ø4Z MVFR CIG..
CYS 181Ø1Ø 1ØØ SCT C25Ø BKN 2512. 16Z C8Ø BKN 2815. 22Z C5Ø OVC 2920G3Ø.
Ø4Z MVFR CIG WIND..
CPR 181Ø1Ø 14Ø SCT C25Ø BKN 2320G3Ø. 17Z C6Ø OVC 2325G4Ø. 22Z 3Ø SCT C6Ø OVC
2325G4Ø SCT V BKN. Ø4Z MVFR CIG WIND..
BFF 181Ø1Ø 25Ø -SCT OCNL 1ØØ SCT. 16Z 1ØØ SCT 25Ø -BKN 2912. Ø4Z VFR..
SHR 181Ø1Ø 25Ø SCT. 19Z 6Ø SCT C18Ø BKN 3Ø12. 23Z C5Ø BKN 3Ø12. Ø4Z MVFR..
DEN 181Ø1Ø 25Ø -BKN. 16Z 12Ø SCT C25Ø BKN 2Ø15. 22Z C1ØØ BKN 2115G2Ø.
ØØZ CFP C8Ø OVC 3118G25. Ø4Z VFR..

NOTE: The contractions CLR, SCT, BKN, and OVC have replaced the symbols ○, ◑, ◕, and ●.

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355. The freezing level and areas of probable icing conditions aloft can best be determined by referring to

K08
1- Terminal Forecasts.
2- Area Forecasts.
3- Winds Aloft Forecasts.
4- Aviation Sequence Reports.

356. Based on the Terminal Forecasts above for Casper (CPR) and Rapid City (RAP) you would expect

K09
1- Rapid City to have a ceiling of 1,000 feet at the beginning of the forecast period.
2- the lowest clouds at Casper to be 3,000 feet scattered.
3- the lowest layer of clouds at Rapid City to be 8,000 feet broken.
4- the surface wind at Casper to be from 250° at 23 knots after frontal passage.

357. Refer to the Terminal Forecasts above. During the forecast period, the lowest layer of clouds at Sheridan (SHR) is forecast to be

K09
1- 5,000 feet broken.
2- 1,800 feet broken.
3- 500 feet broken.
4- 2,500 feet scattered.

358. Based on the Terminal forecasts above for Cheyenne (CYS) and Denver (DEN) you would expect

K09
1- the lowest layer of clouds at Cheyenne to be 5,000 feet overcast.
2- the lowest layer of clouds at Denver to be 1,200 feet scattered.
3- the surface wind at Cheyenne to be from 120° at 25 knots at the beginning of the forecast period.
4- Denver to have a ceiling of 2,500 feet at the beginning of the forecast period.

359. Refer to the Terminal Forecasts above. During the forecast period, the lowest layer of clouds at Casper (CPR) is forecast to be

K09
1- 3,000 feet scattered.
2- 2,500 feet broken.
3- 1,400 feet scattered.
4- 600 feet overcast.

360. Refer to the Terminal Forecasts above. During the forecast period, the lowest layer of clouds at Scottsbluff (BFF) is forecast to be

K09
1- 2,500 feet thin broken.
2- 2,500 feet thin scattered.
3- 1,000 feet scattered.
4- 10,000 feet scattered.

361. Refer to the Terminal Forecasts above for Scottsbluff (BFF) and Rapid City (RAP). What is the lowest ceiling forecast during this period at either of these stations?

K09
1- 8,000 feet broken.
2- 2,500 feet broken.
3- 5,000 feet broken.
4- 4,000 feet scattered.

362. The height of a cloud base, as given in Aviation Weather Reports, is reported as height above

K12
1- the highest terrain within a radius of 5 miles of the observation station.
2- the pressure altitude elevation of the station at the time of the observation.
3- mean sea level at the station of observation.
4- the surface at the station of observation.

SELECTED SURFACE AVIATION WEATHER REPORTS

SA 181300
RAP SA 1251 250 -SCT 15 042/36/21/1909/959
BFF SA 1253 200 -SCT 25 088/27/19/0805/974
SNY RS 1252 CLR 20 088/32/27/2812/975
CPR SA 1253 140 SCT 250 -BKN 15 038/37/21/2418/967 → CPR ↘ 11/7 11/8
CYS SA 1251 E250 BKN 15 073/42/21/2708/980 → CYS ↘ 10/5 11/1
→ CYS 10/5 CYS RWY LGTS 12-30 OTS
→ CYS 11/1 CYS 12-30 CLSD 15-2300 WKDAY
LAR SA 1252 E120 BKN 250 OVC 15 086/35/22/2313/983
SLC SA 1251 E110 OVC 30 079/53/28/1916G24/981/VIRGA ALQDS

SA 181400
RAP SA 1352 250 -SCT 35 028/45/20/2415/958
BFF SA 1351 80 SCT 200 -BKN 25 090/29/20/0000/975
SNY SA 1354 100 SCT 250 -SCT 20 088/31/24/2608/974
CPR SA 1351 140 SCT 250 -BKN 60 027/38/21/2222G29/964 → CPR ↘ 11/7 11/8
CYS SA 1354 E250 BKN 30 071/40/21/2906/978 → CYS ↘ 10/5 11/1
→ CYS 10/5 CYS RWY LGTS 12-30 OTS
→ CYS 11/1 CYS 12-30 CLSD 15-2300 WKDAY
LAR SA 1355 50 SCT E100 BKN 250 OVC 40 090/33/23/2310/983
SLC SA 1352 E90 OVC 25RW- 096/53/30/2410G21/986/RB52 WND 20V26

NOTE: The contractions CLR, SCT, BKN, and OVC have replaced the symbols ○ , ◑ , ◍ , and ⊕ .

363. Compare the above 1300 and 1400 Aviation Weather Reports for Casper (CPR). Which statement is true?

K12
1- The visibility was greater at 1300 than at 1400.
2- The temperature/dewpoint spread was 1° greater in the 1400 report.
3- The altimeter setting at 1400 was 30.27" Hg.
4- The wind shifted from southwest at 1300 to northwest at 1400.

364. Refer to the 1300 Aviation Weather Reports above for Casper (CPR) and Salt Lake City (SLC). Which statement is true?

K12
1- The cloud bases were lower at Casper than those at Salt Lake City.
2- The altimeter setting at Casper was 30.38" Hg.
3- At Salt Lake City there were wisps or streaks of water or ice particles falling out of the clouds in all quadrants.
4- The temperature/dewpoint spread was greater at Casper than it was at Salt Lake City.

365. Refer to the 1400 Aviation Weather Reports above for Scottsbluff (BFF) and Laramie (LAR). Which statement is true?

K12
1- The Laramie visibility was 40 miles.
2- The temperature/dewpoint spread was greater at Scottsbluff than it was at Laramie.
3- The surface wind at Laramie was from 023° at 10 knots.
4- The altimeter setting at Scottsbluff was 30.90" Hg.

366. Compare the 1300 and 1400 Aviation Weather Reports above for Rapid City (RAP). Which statement is true relative to changes that occurred between 1300 and 1400?

K12
1- The temperature/dewpoint spread has decreased.
2- The sky conditions have remained 2,500 feet thin scattered.
3- The altimeter setting has increased.
4- The wind velocity has increased 6 knots.

367. Refer to the 1300 Aviation Weather Reports above for Sidney (SNY) and Cheyenne (CYS). Which statement is true?

K12
1- The visibility was greater at Cheyenne than it was at Sidney.
2- The surface wind at Sidney was from 028° at 12 knots.
3- The altimeter setting at Sidney was 29.75" Hg.
4- The temperature/dewpoint spread was greater at Sidney than it was at Cheyenne.

368. Select the true statement pertaining to the 1300 Aviation Weather Reports above for Sidney (SNY) or for Cheyenne (CYS).

K12
1- There are several NOTAMS listed for Cheyenne.
2- The visibility at Cheyenne was greater than the visibility at Sidney.
3- The altimeter setting at Cheyenne was 30.73" Hg.
4- The temperature at Sidney was higher than the temperature at Cheyenne.

IN-FLIGHT ADVISORIES

MKC WA 181[illegible]
181[illegible] 181[illegible]

AIRMET CHARLIE 1. FLT PRCTN. MTNS WRN WYO AND WRN COLO OCNL MDT TURBC BLO 18[illegible] WITH FCT SIG ODDL ERN SLOPES WITH CONDS CONTG BYD 19Z.

MKC WA 18[illegible]
18[illegible]-181[illegible]

AIRMET ALFA 2. FLT PRCTN. ERN AND CNTRL KANS AND SERN NEB CIGS BLO ONE THSD AND VSBYS OCNL BLO 3MI IN FOG WITH CONDS SPRDG NWD INTO NERN NEB BY 19Z. CONDS CONTG AFT 19Z.

MKC WA 181[illegible]
181[illegible]-182[illegible]

AIRMET BRAVO 1. FLT PRCTN. MTNS NWRN WYO OBSCD IN CLDS AND SNW AOA 7[illegible] WITH CONDS SPRDG SWD AND EWD AND CONTG BYD 21Z. CONT ADVY BYD 21Z.

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369. Which statement is true concerning In-Flight Weather Advisories?

K13
1- AIRMETS will be issued concerning weather phenomena of such severity as tornadoes, embedded thunderstorms, squall lines, severe and extreme turbulence, 3/4" hail, and severe icing.
2- SIGMETS will be issued concerning weather phenomena that may be potentially hazardous to single-engine and light aircraft.
3- In-Flight Weather Advisories are also called PIREPS (Pilot Weather Reports).
4- The purpose of this service is to notify enroute pilots of the possibility of encountering hazardous flying conditions.

370. Refer to the In-Flight Advisories above. Which one of the following statements is true regarding "AIRMET BRAVO 1"?

K13
1- The mountains are obscured by clouds and snow at 700 feet above the surface in northwestern Wyoming.
2- The mountains in northwestern Wyoming are obscured at or above 7,000 feet.
3- Ceilings below 700 feet are expected in the northwestern part of Wyoming.
4- A squall line with ceilings below 700 feet is spreading southward and eastward across Wyoming.

371. Which statement is true in regard to In-Flight Weather Advisories?

K13
1- SIGMET advisories include weather phenomena potentially hazardous to all aircraft.
2- AIRMET advisories concern such severe weather phenomena as tornadoes, thunderstorms, and severe turbulence.
3- Both SIGMETS and AIRMETS are broadcast on receipt and at quarter-hour intervals thereafter.
4- SIGMETS include weather phenomena less severe than those covered by AIRMETS.

372. Refer to the In-Flight Advisories above. Which statement is true concerning "AIRMET ALFA 2"?

K13
1- "AIRMET ALFA 2" was issued at 1808 Greenwich time.
2- In northern Nebraska the ceilings are below 1,000 feet with fog.
3- The visibility in southern Nebraska is beyond 3 miles.
4- Eastern and central Kansas has ceilings below 1,000 feet.

373. Refer to the In-Flight Advisories above. Which statement is true concerning "AIRMET CHARLIE 1"?

K13
1- In western Wyoming the visibilities are occasionally below 3 miles in fog.
2- The weather conditions given are expected to continue beyond 1800 Greenwich time.
3- Precipitation is occurring over the mountains of western Wyoming.
4- Western Colorado has mild turbulence below 1,800 feet MSL.

374. Which statement is true regarding In-Flight Weather Advisories?

K13
1- Since AIRMETS and SIGMETS are In-Flight Advisories, they are never included in Area Forecasts.
2- An advisory concerning a line of thunderstorms is called an AIRMET.
3- SIGMETS and AIRMETS are issued to notify enroute pilots of the possibility of encountering hazardous flying conditions.
4- An AIRMET identifies weather phenomena of particular significance to the safety of transport category aircraft.

375. Listed below are factors which change density altitude.

A. Decreasing barometric pressure.
B. Increasing barometric pressure.
C. Decreasing temperature.
D. Increasing temperature.
E. Decreasing relative humidity.
F. Increasing relative humidity.

Select the factors which increase the density altitude at a given airport.

K16
1- A, D, E.
2- B, C, E.
3- A, D, F.
4- B, C, F.

376. Which statement describes the normal characteristics of standing lenticular clouds?

K17
1- The clouds have dense boiling tops. They contain violent turbulence and are considered the most hazardous of the cloud types.
2- The clouds have billowing tops and comparatively high bases, producing continuous rain.
3- The clouds are gray or dark, containing very little turbulence and are not a hazard to flight.
4- The clouds are almond or lens-shaped and show little or no movement, but may contain strong winds and turbulence.

377. An almond or lens-shaped cloud which appears stationary, but which may contain winds of 50 knots or more, is referred to as

K17
1- an inactive frontal cloud.
2- a funnel cloud.
3- a lenticular cloud.
4- a stratus cloud.

378. While flying on the leeward side of a mountain range, you observe almond or lens shaped clouds. These clouds are referred to as

K17
1- cirrocumulus clouds.
2- roll clouds.
3- cirrus clouds.
4- lenticular clouds.

379. Wisps or streaks of precipitation that evaporate before reaching the ground are referred to as

K17
1- a foehn gap.
2- cirrocumulus clouds.
3- virga.
4- roll clouds.

380. Cumulonimbus clouds can best be described as

K17
1- thin, white, featherlike clouds in patches or narrow bands.
2- white or gray layers or patches of solid clouds, usually appearing in waves.
3- dense clouds, dark at lower levels, extending many thousands of feet upward.
4- fluffy, white clouds appearing in layers and sometimes producing steady precipitation.

381. Hail, an in-flight hazard, is most likely to be associated with

K17
1- cirrocumulus clouds.
2- stratocumulus clouds.
3- cumulonimbus clouds.
4- cumulus clouds.

382. Of the following cloud types, which is most likely to produce hail?

K17
1- Cumulus.
2- Stratocumulus.
3- Cirrocumulus.
4- Cumulonimbus.

383. Cloud heights as reported in the Surface Aviation Weather Reports are reported in hundreds of feet above

K18
1- mean sea level (MSL).
2- ground level at the station of observation.
3- the highest terrain within the Airport Traffic Area of the station of observation.
4- the highest terrain within 5 statute miles from the station of observation.

SURFACE AVIATION WEATHER REPORTS

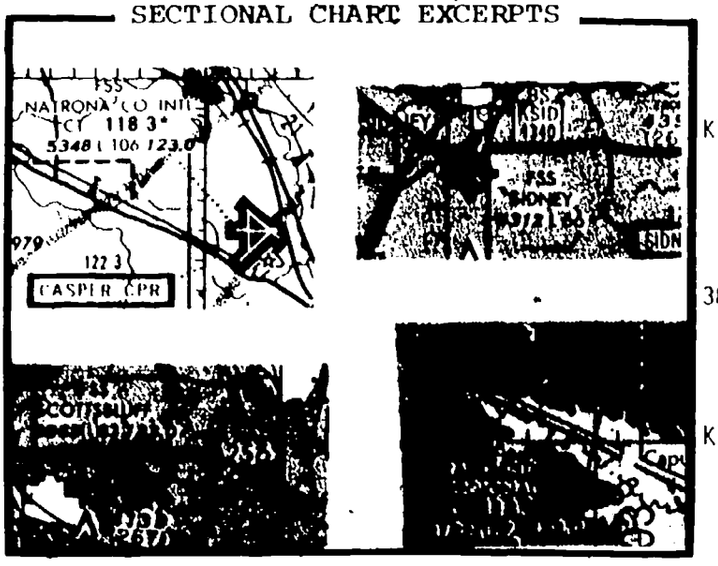
SA 181300
RAP SA 1251 150 -SCT 15 042/36/21/1909/959
BFF SA 1253 100 -SCT 25 088/27/19/0805/974
SNY SA 1254 100 SCT 20 088/31/24/2608/974
CPR SA 1253 140 SCT 250 -BKN 15 038/37/21/2418/967

NOTE: The contractions CLR, SCT, BKN, and OVC have replaced the symbols (), (), (), and ().

STATION IDENTIFIERS

BFF	Scottsbluff, Nebraska
CPR	Casper, Wyoming
RAP	Rapid City, South Dakota
SNY	Sidney, Nebraska

SECTIONAL CHART EXCERPTS



384. Based on the Aviation Weather Report and excerpt above for Sidney, Neb. (SNY), the base of the clouds above the Sidney airport would be at what indicated altitude?

K18
1- 5,688 feet MSL.
2- 14,312 feet MSL.
3- 5,312 feet MSL.
4- 10,000 feet MSL.

385. Refer to the Aviation Weather Reports and excerpts above. At what indicated altitude above Scottsbluff (BFF) airport would you expect to find the base of the clouds?

K18
1- 4,965 feet MSL.
2- 10,000 feet MSL.
3- 6,035 feet MSL.
4- 13,965 feet MSL.

386. Based on the Aviation Weather Report and excerpt to the left for Natrona County Intl. Airport, Casper, Wyo., the base of the lowest clouds above the airport would be at what indicated altitude?

K18
1- 8,652 feet MSL.
2- 6,748 feet MSL.
3- 19,348 feet MSL.
4- 14,000 feet MSL.

387. Referring to the adjacent chart excerpt and Aviation Weather Report for Sidney, the base of clouds over Sidney airport is determined to be at what indicated altitude?

K18
1- 18,312 feet MSL.
2- 14,312 feet MSL.
3- 10,000 feet MSL.
4- 5,688 feet MSL.

388. Based on the Aviation Weather Report and excerpt to the left for Rapid City Regional Airport, the base of the clouds above the airport would be at what indicated altitude?

K18
1- 18,182 feet MSL.
2- 15,000 feet MSL.
3- 11,818 feet MSL.
4- 4,682 feet MSL.

389. According to the Scottsbluff, Neb. (BFF), excerpt to the left, the base of the clouds above the airport would be at what indicated altitude?

K18
1- 4,965 feet MSL.
2- 10,000 feet MSL.
3- 13,965 feet MSL.
4- 7,000 feet MSL.

390. HAIL is considered to be an in-flight hazard. Which statement is true concerning this hazard?

K18
1- Hail is usually produced by cirrostratus clouds.
2- Subtropical and tropical thunderstorms contain more hail than thunderstorms in northern latitudes.
3- Large hailstones are entirely composed of clear ice.
4- Hailstones may be thrown outward from a storm cloud for as much as 5 miles.

391. When the Aviation Weather Reports for your destination station show an air temperature of 55° F. to be within 4° of the dew-point temperature and the spread between the two is decreasing, it is likely that upon arrival you would encounter

K20
1- fog or low clouds.
2- thunderstorms and cold frontal-type weather.
3- an increase in pressure altitude.
4- freezing precipitation or icing conditions.

392. Low-level wind shear occurs

K19
1- when surface winds are 15 knots and there is no change in wind direction and windspeed with height.
2- after a warm front has passed.
3- when there is a low-level temperature inversion with strong winds above the inversion.
4- when surface winds are light and variable.

393. Suppose hazardous low-level wind shear is encountered during the initial climb after takeoff. Select the true statement.

K19
1- The wind direction will always change from a headwind to a tailwind when flying through wind shear.
2- When passing through wind shear the groundspeed will usually remain constant.
3- Low-level wind shear may be associated with a thunderstorm's gust front that precedes the actual storm by 15 nautical miles.
4- The pilot should decrease power to compensate for the increase in lift.

394. Low-level wind shear is best described as

K19
1- deflection of wind currents as the result of coriolis force.
2- a downward motion of the air associated with continuous winds blowing with an easterly component due to the rotation of the earth.
3- a change in wind direction and/or speed in a very short distance in the atmosphere.
4- a violently rotating column of air extending from a cumulonimbus cloud.

395. Which statement is true regarding the in flight hazard called HAIL?

K19
1- Hail is usually produced by cirro cumulus clouds.
2- Large hailstones usually do not have alternating layers of clear and cloudy ice.
3- Subtropical and tropical thunderstorms contain more hail than thunderstorms in northern latitudes.
4- Large hail is most commonly found in thunderstorms which have strong updrafts and large liquid water content.

396. Which statement is true regarding HAIL?

K19
1- Large hailstones are entirely composed of clear ice.
2- Hail is usually produced by cirrocumulus clouds.
3- Subtropical and tropical thunderstorms contain more hail than thunderstorms in northern latitudes.
4- Hail is usually produced during the mature stage of a thunderstorm's life span.

397. Consider the following statements with relation to HAIL as an in-flight hazard to aircraft, and select those which are correct.

A. There is a useful correlation between the external visual appearance of thunderstorms and the amount of hail within them.
B. Large hail is most commonly found in thunderstorms which have strong updrafts and large liquid water content.
C. Hail may be found at any level within a thunderstorm, but not in the clear air outside of the storm cloud.
D. Hail is usually produced during the mature stage of the thunderstorm's life span.
E. Hailstones may be thrown upward and outward from a storm cloud for as much as 5 miles.

The true statements are

K19
1- B, D, E.
2- A, B, C.
3- A, B, C, D, E.
4- A, B, D, E.

398. Select the true statement concerning a temperature inversion.

K22
1- A temperature inversion normally develops with a decrease in the temperature as height is increased.
2- A temperature inversion occurs when unstable air rapidly transfers heat from the surface upward.
3- A temperature inversion often develops near the ground on clear, cool nights when the wind is light.
4- A temperature inversion is usually indicated by the base of a line of cumulus clouds.

399. The zone of transition between two air masses of different density is referred to as a

K22
1- front.
2- foehn.
3- frontolysis.
4- frontogenesis.

400. A moist, cold air mass that is being warmed from below is characterized, in part, by

K22
1- smooth air.
2- fog and drizzle.
3- continuous heavy precipitation.
4- showers and thunderstorms.

401. Which of the following would decrease the stability of an air mass?

K22
1- Decrease in water vapor.
2- Cooling from below.
3- Warming from below.
4- Sinking of the air mass.

402. Suppose conditionally unstable air with high moisture content and very warm surface temperatures are forecast. From these conditions you should expect

K22
1- continuous heavy precipitation.
2- fog and drizzle.
3- strong updrafts and cumuliform clouds.
4- smooth air and excellent weather for flying.

403. The weather condition normally associated with unstable air is

K22
1- fair to poor visibility.
2- good visibility, except in blowing sand or snow.
3- stratiform clouds.
4- continuous precipitation.

404. Advection fog is formed as a result of

K21
1- moist air condensing as it moves over a cooler surface.
2- the ground cooling adjacent air to the dewpoint temperature on clear, calm nights.
3- the addition of moisture to a mass of cold air as it moves over a body of water.
4- moist, unstable air being cooled as it is forced up a sloping land surface.

405. Radiation fog is most likely to occur under which of the following conditions?

K21
1- Warm, moist air flowing from a body of water over a cold surface with an 8 to 10 knot wind causing mixing and condensation.
2- Warm, moist air being forced upslope by light winds resulting in the air being cooled and condensed.
3- Low temperature/dewpoint spread, calm wind conditions, the presence of hydroscopic nuclei, low overcast, and favorable topography.
4- A clear sky, little or no wind, and small temperature/dewpoint spread.

406. The temperature to which moist air must be cooled to become saturated is defined as

K20
1- sublimation.
2- condensation nuclei.
3- relative humidity.
4- dewpoint.

407. If the temperature/dewpoint spread is 4° and decreasing, and the temperature is 62° F., what type weather is most likely to develop?

K20
1- Rain showers.
2- Fog or low clouds.
3- Thunderstorms.
4- Freezing precipitation.

408. Select the statement which is correct in regard to the life cycle of thunderstorms.

K24
1- Throughout the dissipating stage of a thunderstorm the updrafts continue to develop.
2- The beginning of rain at the earth's surface indicates the dissipating stage of the thunderstorm.
3- The beginning of rain at the earth's surface indicates the mature stage of the thunderstorm.
4- The initial stage of a thunderstorm is always a nimbus cloud which means "rain cloud."

409. A squall line, which may precede a cold front, will often be characterized by

K24
1- widespread fog and extremely cold surface temperature.
2- thunderstorms and turbulence.
3- milder weather conditions than the cold front itself.
4- fog, low stratus clouds, and steady drizzle.

410. In regard to flying in the vicinity of thunderstorms, you should be aware that

K24
1- avoidance of lightning and hail is assured by flying in the clear air outside the confines of a thunderstorm cell.
2- the overhanging anvil of a thunderstorm points in the direction from which the storm has moved.
3- the most severe conditions, such as heavy hail, destructive winds, and tornadoes are generally associated with squall line thunderstorms.
4- avoidance of severe turbulence is assured by circumnavigating thunderstorms and clearing edges of the storms by 5 miles.

411. A squall line is usually associated with

K24
1- a fast-moving cold front.
2- a fast-moving warm front.
3- a stationary front.
4- an occluded front.

412. The most severe weather conditions, such as destructive winds, heavy hail, and tornadoes, are generally associated with

K24
1- fast-moving fronts.
2- squall line thunderstorms.
3- slow-moving warm fronts.
4- slow-moving cold fronts.

413. Thunderstorms are produced by which type clouds?

K24
1- Stratocumulus.
2- Altostratus.
3- Cumulonimbus.
4- Nimbostratus.

414. When a cold front overtakes a warm front, the two of them join together to form

K23
1- a squall line.
2- a stationary front.
3- an occluded front.
4- a dewpoint front.

415. Regarding the characteristics and weather associated with a warm front, which of the following is a true statement?

K23
1- The presence of thunderstorms in a warm front is usually easy to detect, since they are not embedded in cloud masses.
2- The frontal zone may have zero ceilings and zero visibilities over a wide area.
3- Colder air is overtaking and replacing warmer air and this usually produces wide bands of precipitation ahead of the warm front surface position.
4- Squall lines sometimes develop 300 miles ahead of warm fronts.

416. An advancing warm front that has moist and stable air is characterized, in part, by

K23
1- a wall of turbulent clouds known as a "squall line."
2- stratiform clouds and smooth air.
3- thunderstorms embedded in the cloud masses.
4- tornadic activity and extensive electrical discharges.

417. A temperature inversion would most likely result in which of the following weather conditions?

K22
1- Clouds with extensive vertical development above an inversion aloft.
2- Good visibility in the lower levels of the atmosphere and poor visibility above an inversion aloft.
3- An increase in temperature as altitude is increased.
4- A decrease in temperature as altitude is increased.

418. Select the true statement concerning aircraft structural icing.

K25
1- It is impossible for weather forecasters to identify regions where icing is possible.
2- Rime ice is the most common type of ice encountered in cumuliform clouds.
3- The most rapid accumulations of clear ice are usually at temperatures from 0° C. to -15° C.
4- The most common type of icing encountered in lower level stratus clouds is clear ice.

419. Select the true statement regarding aircraft structural icing.

K25
1- It is unnecessary for an aircraft to fly through rain or cloud droplets for structural ice to form.
2- Clear ice is most likely to form on an airplane when flying through stratified clouds or light drizzle.
3- In order for structural ice to form, the temperature at the point where moisture strikes the aircraft must be 0° C. (32° F.) or colder.
4- Rime ice gradually freezes on an airplane's surface becoming a smooth sheet of solid ice.

420. Which statement is true regarding frost which has not been removed from the lifting surfaces of an airplane before flight?

K25
1- It would present no problems since frost will blow off when the airplane starts moving during takeoff.
2- It may cause the airplane to become airborne with a lower angle of attack and at a lower indicated airspeed.
3- It may prevent the airplane from becoming airborne.
4- It will change the curvature of the wing (camber) thereby increasing lift during the takeoff.

421. The type of ice which forms on an aircraft surface depends on

K25
1- an inversion aloft.
2- the increase in flight altitude.
3- the temperature/dewpoint spread.
4- the size of the water drops or droplets that strike the aircraft surface.

422. The most rapid accumulation of clear ice on an airplane in flight may occur with temperatures between 0° C. to -15° C. in

K25
1- ice fog.
2- any clouds or dry snow.
3- cumuliform clouds.
4- stratiform clouds.

423. Hazardous in-flight structural icing, with which a pilot should be familiar includes frost, rime, and clear ice. Which statement is true concerning this hazard?

K25
1- Frost may form in flight when a cold aircraft descends from a zone of subzero temperatures to a zone of above freezing temperatures and high relative humidity.
2- Clear ice is a milky, opaque, and granular deposit of ice with a rough surface.
3- Rime ice is a transparent ice with a glossy surface.
4- Cumuliform type clouds are less apt to produce serious ice formation than other type clouds.

424. Frost which has not been removed from the lifting surfaces of an airplane before flight

K25
1- may prevent the airplane from becoming airborne.
2- will change the camber (curvature of the wing) thereby increasing lift during the takeoff.
3- may cause the airplane to become airborne with a lower angle of attack and at a lower indicated airspeed.
4- would present no problems since frost will blow off when the airplane starts moving during takeoff.

425. Tornadoes are more likely to occur with which type thunderstorms?

K24
1- Air mass thunderstorms.
2- Steady-state thunderstorms associated with cold fronts or squall lines.
3- Squall line thunderstorms that form ahead of warm fronts.
4- Tropical thunderstorms during the mature stage.

426. Select the true statement concerning isobars and windflow patterns around high and low pressure systems that are shown on a Surface Analysis (Surface Weather Map).

K28
1- When the isobars are far apart, crests of standing waves may be marked by stationary lenticular clouds.
2- Isobars connect contour lines of equal temperature.
3- When the isobars are close together, the pressure gradient force is greater and wind velocities are stronger.
4- Surface winds flow perpendicular to the isobars.

427. A pilot planning a long distance flight from west to east in the conterminous United States would most likely find favorable winds associated with high and low pressure systems by planning to fly a course which is

K28
1- north of a high.
2- north of a low.
3- south of a high.
4- south of both highs and lows.

428. In the Northern Hemisphere, a pilot making a long distance flight from east to west would most likely find favorable winds associated with high and low pressure systems by flying

K28
1- to the north of a high and to the south of a low.
2- to the south of a high and to the north of a low.
3- through the center of highs and lows.
4- to the north of a high.

429. What aerodynamic effects will structural icing have on an airplane?

K25
1- Stalling speed decreases.
2- Lift decreases; weight increases.
3- Drag increases; thrust is not affected.
4- Weight increases; lift is not affected if drag and thrust remain constant.

430. As shown on a Surface Weather Map, what causes surface winds to flow across the isobars at an angle rather than parallel to the isobars?

K28
1- Heat radiation from the surface.
2- The difference between air temperature and dewpoint temperature.
3- Surface friction and windflow toward lower pressure.
4- Coriolis force.

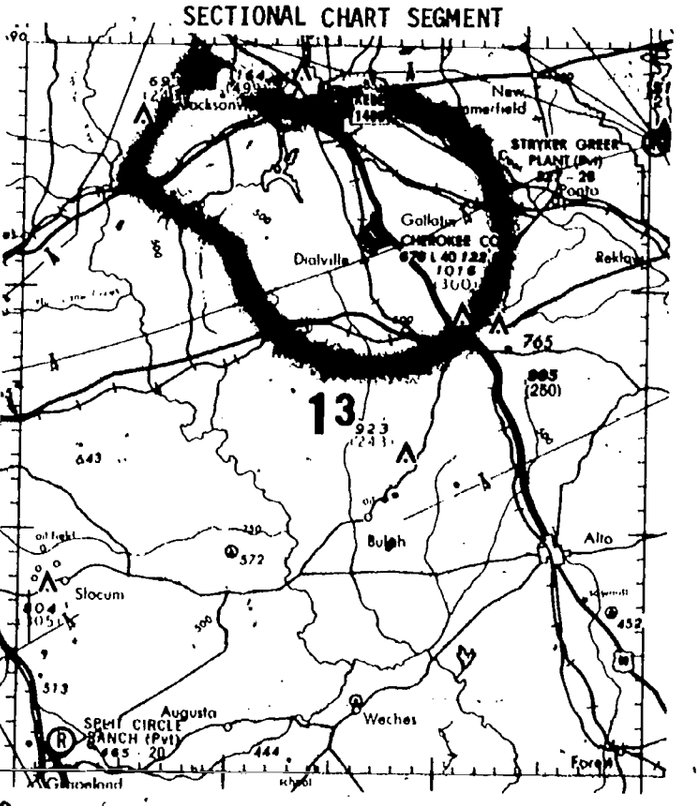
431. In strong wind conditions, flight over a mountainous area within close proximity to the peaks may be hazardous because of

K29
1- violent downdrafts on the windward side.
2- violent downdrafts on the leeward side.
3- strong turbulence associated with stratus clouds.
4- wind shear on the windward side.

432. Refer to the chart below. The maximum elevation of the terrain and obstructions (towers, antennas, etc.) within the quadrangle bounded by ticked lines of latitude and longitude is

L01
1- 1,400 feet MSL.
2- 1,164 feet MSL.
3- 1,300 feet MSL.
4- 995 feet MSL.

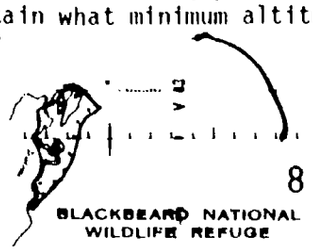
SECTIONAL CHART SEGMENT



433. Contour lines placed on a Sectional Aeronautical Chart are to show points of the same

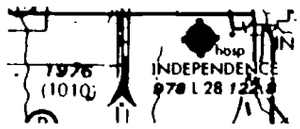
L01
1- longitude.
2- variation.
3- latitude.
4- elevation above sea level.

434. When flying over a National Wildlife Refuge (such as shown below), pilots are requested to maintain what minimum altitude above the terrain?



L01
1- 1,500 feet.
2- 2,000 feet.
3- 1,000 feet.
4- 3,000 feet.

435. Note the obstruction which is shown in the sectional chart excerpt below.



Select the true statement regarding this obstruction.

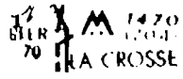
L01
1- This is a free standing tower with no guy wires, the base of which is 1,010 feet MSL.
2- This is a group obstruction; the tops are 1,976 feet AGL.
3- This is a group obstruction; the tops are less than 1,000 feet MSL.
4- The top of this obstruction is 1,010 feet AGL.

436. Refer to the obstruction which appears in the sectional chart excerpt below.

The top of this obstruction is

L01
1- 1,172 feet AGL.
2- below 1,000 feet MSL.
3- more than 1,000 feet MSL.
4- more than 1,000 feet AGL.

437. Note the obstruction in the sectional chart excerpt below.



Select the true statement regarding this obstruction.

L01
1- This is a group obstruction; the tops are 1,470 feet AGL.
2- This is a group obstruction; the tops are less than 1,000 feet AGL.
3- This is a single obstruction; the top is more than 1,000 feet MSL.
4- The base of this group obstruction is 204 feet MSL.

438. Consider this Sectional Aeronautical Chart excerpt of a National Wildlife Refuge.

Which statement is true regarding these areas?

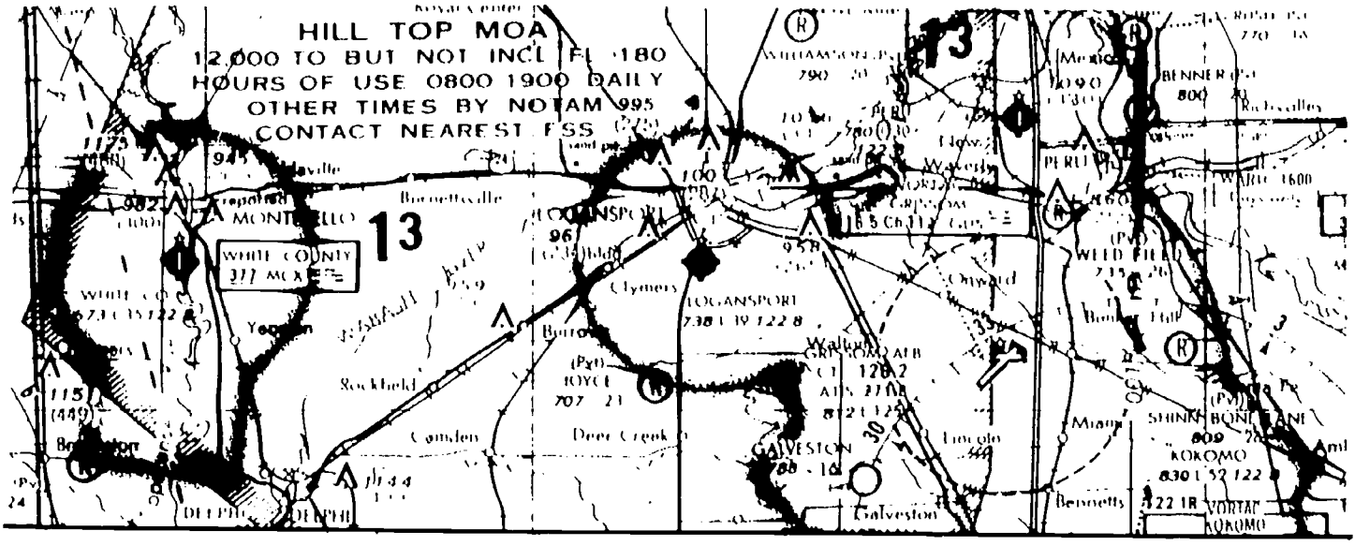
L01
1- A minimum altitude of 3,000 feet above the terrain is required while flying over these areas.
2- These areas have no meaning to you as a pilot.
3- Prior approval is required to fly over these areas.
4- Pilots are requested to maintain a minimum altitude of 2,000 feet above the terrain while flying over these areas.

439. Large numbers, such as shown below, are depicted on Sectional Aeronautical Charts.

08 17 29

These numbers

L01
1- do not include maximum elevation of vertical obstructions within the areas.
2- indicate the base of the controlled airspace over the areas.
3- are maximum elevation figures (including terrain and obstructions) shown in quadrangles bounded by ticked lines of latitude and longitude.
4- are latitude and longitude coordinates of the areas bounded by ticked lines.



440. Which statement concerning the Hill Top MOA shown in the chart excerpt above is true?

LOI
1- VFR flights below 12,000 feet require rerouting by the nearest FSS.
2- Flights below 12,000 feet must be operating on IFR flight plans.
3- Extreme caution should be exercised while flying within this area.
4- VFR flights are not permitted above 12,000 feet MSL.

441. Refer to the airport symbols to the right and select the true statement concerning these symbols.

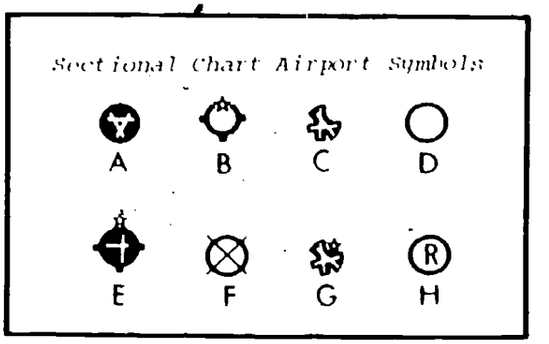
LOI
1- Airport symbol "A" depicts an airport that has no hard-surfaced runways.
2- The stars on airport symbols "B," "E," and "G" indicate that these are military airports.
3- Airport symbols "B," "E," and "G" depict those airports with services, and fuel is available.
4- Airport symbol "H" depicts a Rotorcraft-Helicopter facility.

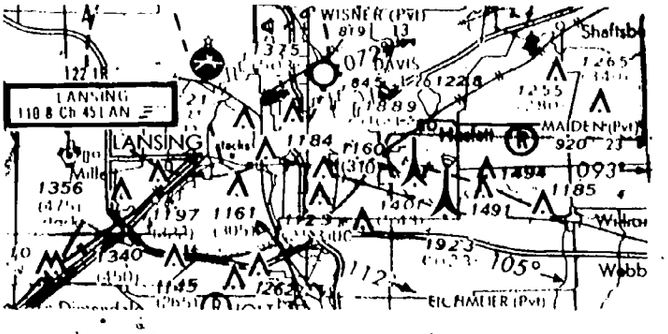
442. Refer to the sectional chart excerpt to the right. Assume you are inbound from the east to Lansing VORTAC. In accordance with regulations, which one of the following altitudes would be the minimum safe altitude to fly over the highest obstruction shown?

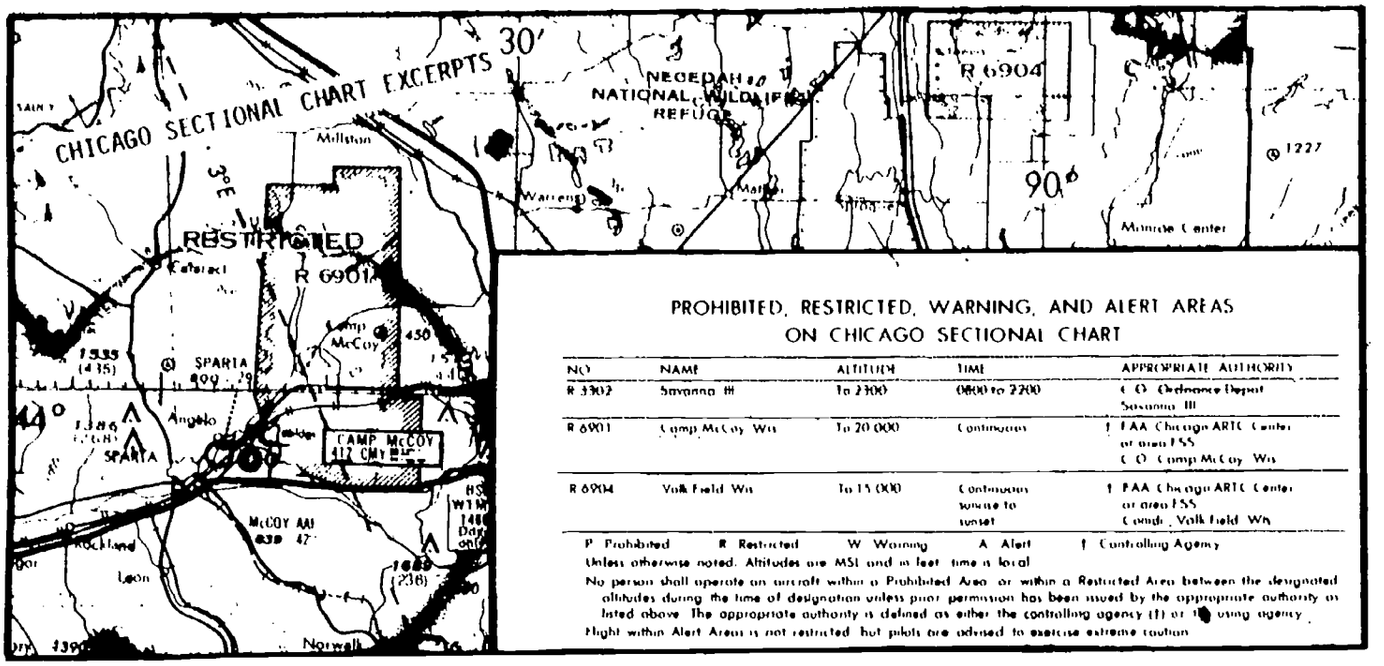
LOI
1- 3,000 feet MSL
2- 4,500 feet MSL.
3- 3,500 feet MSL.
4- 2,000 feet MSL.

443. The Hill Top MOA appears in the upper left portion of the chart excerpt above. Which statement is true concerning the MOA?

LOI
1- The military services conduct low altitude navigation flights at or below 1,500 feet AGL at speeds exceeding 250 knots within this area.
2- Some training activities may necessitate acrobatic maneuvers by military aircraft within this area.
3- VFR flights between 12,000 feet and Flight Level 180 are prohibited within this area.
4- It is a prohibited area for all VFR flights unless special permission is obtained.







PROHIBITED, RESTRICTED, WARNING, AND ALERT AREAS ON CHICAGO SECTIONAL CHART

NO	NAME	ALTITUDE	TIME	APPROPRIATE AUTHORITY
R 3302	Savanna Ill	To 2300	0800 to 2200	† C O Ordnance Depot Savanna Ill
R 6901	Camp McCoy Wis	To 20 000	Continuous	† FAA Chicago ARTC Center or area F55 C O Camp McCoy Wis
R 6904	Volk Field Wis	To 15 000	Continuous sunrise to sunset	† FAA Chicago ARTC Center or area F55 Comdr Volk Field Wis

P Prohibited R Restricted W Warning A Alert † Controlling Agency

Unless otherwise noted, Altitudes are MSL and in feet time is local

No person shall operate an aircraft within a Prohibited Area or within a Restricted Area between the designated altitudes during the time of designation unless prior permission has been issued by the appropriate authority as listed above The appropriate authority is defined as either the controlling agency (†) or the using agency

Flight within Alert Areas is not restricted but pilots are advised to exercise extreme caution

444. Refer to the Aeronautical Sectional Chart excerpts above. Which statement is true regarding Restricted Area R-6904?

L01
1- When flying above 15,000 feet MSL over this area, prior approval is not required.
2- Permission from the Commanding Officer of Camp McCoy is required prior to flight within this area.
3- This is a National Wildlife Refuge; flight within this area below 1,500 feet AGL is prohibited.
4- This is a Military Climb Corridor; flight within the area below 20,000 feet MSL is prohibited.

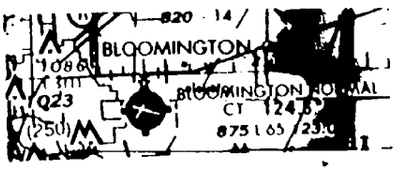
445. Which statement is true regarding flight within Restricted Area R-6901 (above)?

L01
1- Any flight within this area is required to be on an IFR flight plan.
2- VFR flight through this area is permitted, provided prior permission has been obtained.
3- Flight through this area during nighttime hours is prohibited.
4- VFR flight through this area is prohibited.

446. Flight through Restricted Area R-6904 (above) should not be accomplished unless the pilot has

L01
1- filed a VFR flight plan.
2- received prior permission from the Commanding Officer of Camp McCoy.
3- an airplane that is transponder-equipped.
4- received prior permission from the appropriate authority.

447. Refer to the Sectional Chart excerpt below for Bloomington-Normal Airport.

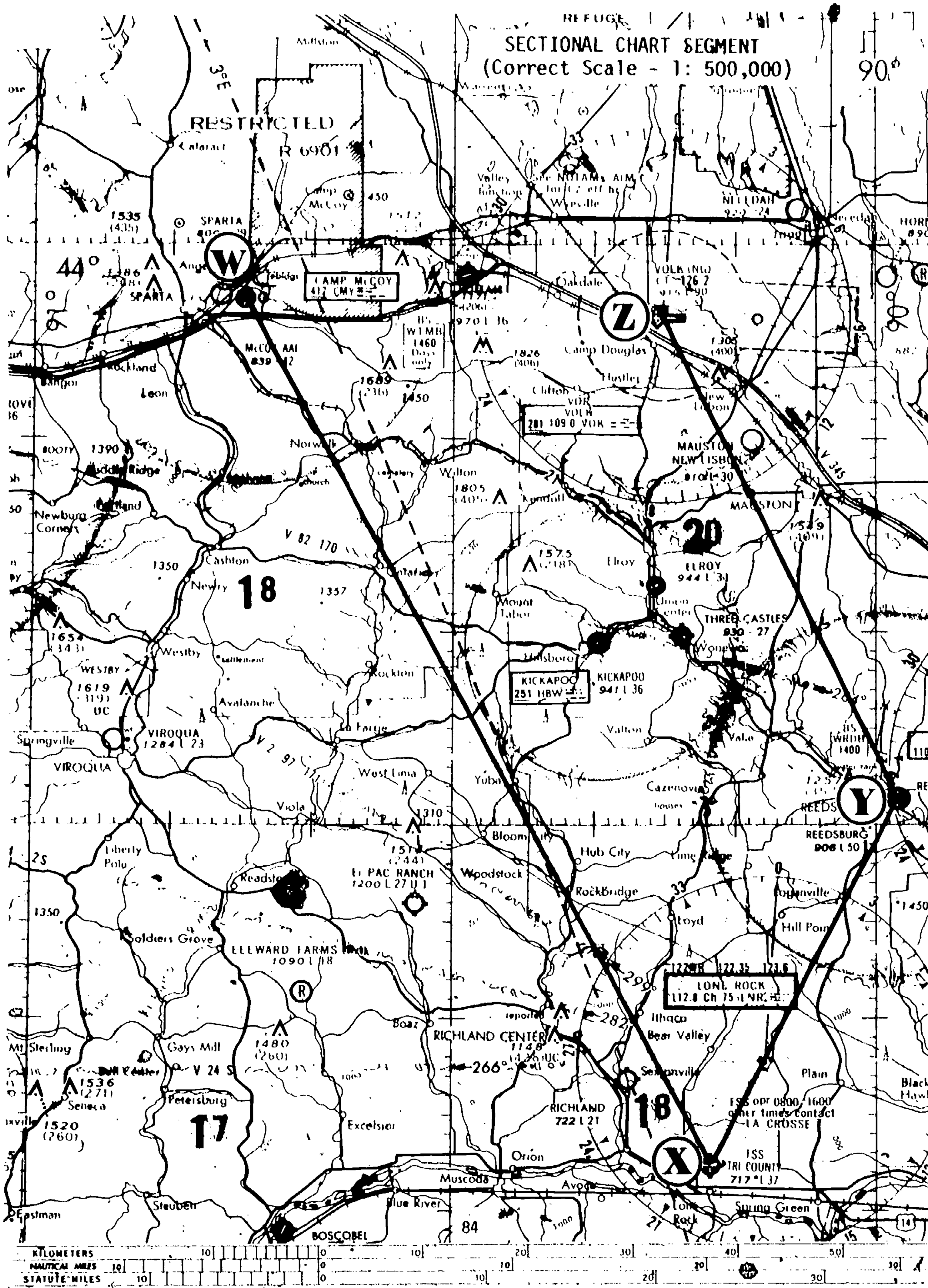


Which statement is true concerning this airport?

L01
1- The Flight Service Station at this airport operates on a frequency of 124.6 MHz.
2- The UNICOM frequency is 122.8 MHz.
3- There is a rotating beacon on the airport.
4- The longest runway is 8,750 feet in length.

448. True course measurements on a sectional aeronautical chart should be made using a meridian near the midpoint of the course because the

L04
1- isogonic lines are not parallel.
2- meridians converge toward the poles and the angles formed by lines of longitude and latitude vary from point to point.
3- geographic North Pole from which direction is measured is not located at the magnetic North Pole.
4- lines of latitude vary from point to point.


SECTIONAL CHART SEGMENT
(Correct Scale - 1: 500,000)
RESTRICTED
R 6901
W
X
Y
Z
CAMP McCOY
SPARTA
Camp Douglas
MAUSTON NEW LISBON
ELROY
THREE CASTLES
KICKAPOO
VIROQUA
LONE ROCK
RICHLAND CENTER
REEDSBURG
Boscobel
Muscoda
Spring Green
Cashton
Westby
Hillsboro
La Farge
Viola
Wilton
Norwalk
Woodstock
Rockbridge
Soldiers Grove
Gays Mill
Readstown
LEEWARD FARMS
Excelsior
Boaz
Blue River
Avoca
Orion
FSS TRI COUNTY
KILOMETERS
NAUTICAL MILES
STATUTE MILES

449. Refer to the chart to the left. What is the MAGNETIC COURSE from Airport "W" direct to Airport "X"?

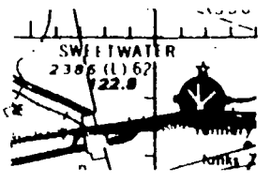
L07
1- 329°.
2- 155°.
3- 152°.
4- 149°.

450. GIVEN:

True course . . . . . 210°
Variation . . . . . 4° East
Cruise altitude . . . 6,500 feet
Wind at 6,500 feet . 240° @ 12 knots
True airspeed . . . . 160 MPH

Under these conditions, what would the magnetic heading and groundspeed be?

L07
1- 220° and 150 MPH.
2- 300° and 160 MPH.
3- 209° and 148 MPH.
4- 200° and 139 MPH.



451. Suppose you fly the traffic pattern at 800 feet AGL at the airport shown above. If the altimeter is properly adjusted to the latest altimeter setting, it would indicate the pattern altitude of

L05
1- 800 feet.
2- 1,586 feet.
3- 5,400 feet.
4- 3,180 feet.

452. Assume the tower advises you that right traffic is in use for landing on Runway 21. In calm wind conditions the magnetic heading on base leg would be approximately

L05
1- 210°.
2- 120°.
3- 300°.
4- 030°.

453. Refer to the adjacent chart. The total distance from Airport "W" to Airport "X" and then to Airport "Y" is approximately

L04
1- 73 statute miles.
2- 84 statute miles.
3- 167 statute miles.
4- 116 statute miles.

454. Refer to the chart to the left and consider the following conditions:

GIVEN:

True airspeed . . . . . 130 MPH
Forecast winds from . . 110° @ 15 knots

The magnetic heading and groundspeed from Airport "X" to Airport "W" would be

L07
1- 151° and 110 MPH.
2- 330° and 120 MPH.
3- 331° and 119 MPH.
4- 334° and 142 MPH.

455. Refer to the chart on opposite page.

GIVEN:

Wind from . . . . . 045° @ 20 knots
True airspeed . . . 145 MPH

Under these conditions, what is the magnetic heading from Airport "W" direct to Airport "X"?

L07
1- 137°.
2- 320°.
3- 144°.
4- 140°.

456. Refer to the chart on opposite page and consider the following conditions:

GIVEN:

True airspeed . . . . . 104 knots
Forecast winds from . . 080° @ 10 knots

Using the Compass Correction Card below, determine the compass heading and groundspeed from Airport "W" to Airport "X".

L07
1- 148° and 101 knots.
2- 156° and 108 knots.
3- 144° and 102 knots.
4- 140° and 116 knots.

457. Refer to the chart to the left and the Compass Correction Card below.

GIVEN:

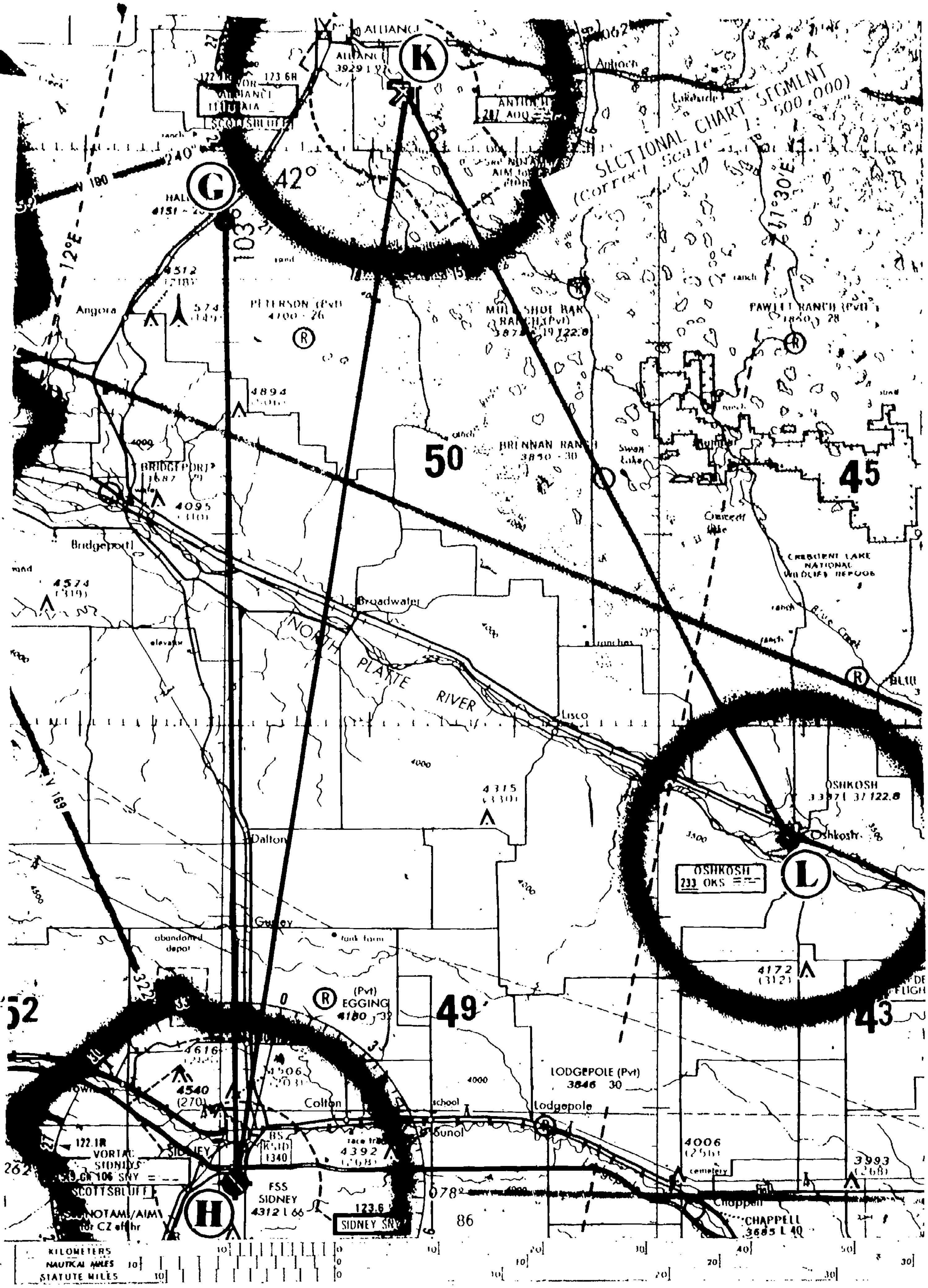
Wind from . . . . . 280° @ 25 knots
True airspeed . . . 150 MPH

Under these conditions, what is the COMPASS HEADING from Airport "X" direct to Airport "W"?

L07
1- 318°.
2- 308°.
3- 332°.
4- 272°.

COMPASS CORRECTION CARD

FOR (MH)	N	030	060	E	120	150	S	210	240	W	300	330
STEER (CH)	0	031	062	094	125	154	181	208	237	266	297	328


SECTIONAL CHART SEGMENT
(Correct Scale – 1:500,000)
K
G
H
L
ALLIANCE
Antioch
PETERSON (Pvt)
4700 - 26
MULE SHOE RANCH (Pvt)
PAWLET RANCH (Pvt)
BRENNAN RANCH
Angora
BRIDGEPORT
Bridgeport
Broadwater
NORTH PLATTE RIVER
Lisco
Dalton
Gurley
OSHKOSH
Oshkosh
EGGING
Colton
Sunol
Lodgepole
LODGEPOLE (Pvt)
3846 30
SIDNEY
FSS
SIDNEY
4312 L 66
SIDNEY SNY
CHAPPELL
3685 L 40
Chappell
CRESCENT LAKE NATIONAL WILDLIFE REFUGE
50
45
49
43
52
KILOMETERS
NAUTICAL MILES
STATUTE MILES

458. Refer to the adjacent chart. What is the magnetic course from Airport "H" to Airport "G"?

L07
1- 178°.
2- 166°.
3- 346°.
4- 358°.

459. Refer to the adjacent chart and consider the following conditions:

GIVEN:

True airspeed . . . . 135 MPH
Wind from . . . . . 115° @ 20 knots

What would the magnetic heading and groundspeed be from Airport "H" to Airport "K"?

L07
1- 020° and 148 MPH.
2- 018° and 146 MPH.
3- 006° and 140 MPH.
4- 010° and 130 MPH.

460. Refer to the adjacent chart and consider the following:

GIVEN:

True airspeed . . . . 150 MPH
Wind from . . . . . 280° @ 16 knots

Under these conditions, what is the magnetic heading from Airport "K" direct to Airport "L"?

L07
1- 326°.
2- 147°.
3- 142°.
4- 136°.

461. Refer to the adjacent chart and consider the following conditions:

GIVEN:

True airspeed . . . . 120 MPH
Wind from . . . . . 045° @ 25 knots
Deviation . . . . . 4° East

The compass heading and groundspeed from Airport "L" to Airport "K" would be

L07
1- 358° and 102 MPH.
2- 330° and 108 MPH.
3- 335° and 115 MPH.
4- 150° and 110 MPH.

462. Refer to the adjacent chart. What is the MAGNETIC COURSE from Airport "G" to Airport "H"?

L07
1- 346°.
2- 190°.
3- 178°.
4- 166°.

463. Refer to the chart to the left. The magnetic courses from Airport "G" to Airport "H," Airport "H" to Airport "K," and then to Airport "L" are, respectively,

L07
1- 167° - 357° - 141°.
2- 178° - 008° - 153°.
3- 191° - 021° - 165°.
4- 179° - 009° - 153°.

464. Refer to the chart to the left. Determine the true courses from Airport "G" to Airport "H," Airport "H" to Airport "K," and then to Airport "L" respectively.

L07
1- 177° - 355° - 138°.
2- 182° - 002° - 140°.
3- 179° - 009° - 153°.
4- 167° - 357° - 141°.

465. GIVEN:

True course . . . . . 030°
Variation . . . . . 5° West
Cruise altitude . . . 7,500 feet MSL
Wind at 7,500 feet . 340° @ 45 knots
True airspeed . . . . 180 MPH

Under these conditions, what would the magnetic heading and groundspeed be?

L07
1- 018° and 136 MPH.
2- 022° and 142 MPH.
3- 030° and 180 MPH.
4- 050° and 217 MPH.

466. Refer to the chart to the left and apply the following conditions:

GIVEN:

True airspeed . . . . 135 knots
Forecast winds from . 090° @ 14 knots

The magnetic heading and groundspeed from Airport "L" to Airport "K" would be

L07
1- 351° and 134 knots.
2- 338° and 144 knots.
3- 327° and 141 knots.
4- 315° and 151 knots.

467. Refer to the chart to the left.

GIVEN:

True airspeed . . . . 160 MPH
Cruise altitude . . . 8,000 feet MSL
Wind at 8,000 feet . 210° @ 40 knots
Deviation . . . . . 4° West

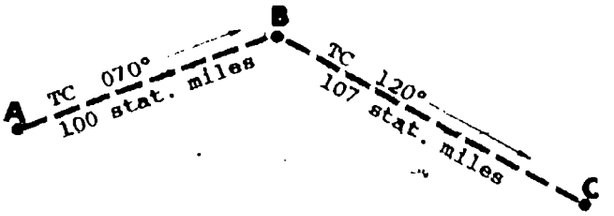
The compass heading and groundspeed from Airport "K" to Airport "H" would be

L07
1- 186° and 117 MPH.
2- 182° and 123 MPH.
3- 194° and 110 MPH.
4- 206° and 142 MPH.

Stated Conditions:

Wind	325°/25 knots
TAS	156 MPH
Variation	7° East
Fuel consumption	11.3 GPH

Route of Flight:



468. How many nautical miles would 160 statute miles be equal to?

L08
1- 172 nautical miles.
2- 129 nautical miles.
3- 184 nautical miles.
4- 139 nautical miles.

469. See stated conditions above. What is the MAGNETIC COURSE from "B" to "C"?

L07
1- 113°.
2- 123°.
3- 108°.
4- 127°.

470. Referring to the stated conditions shown above, the MAGNETIC COURSE from "A" to "B" is

L07
1- 063°.
2- 077°.
3- 052°.
4- 081°.

471. Using the data shown above, the MAGNETIC HEADING from "B" to "C" is

L07
1- 122°.
2- 113°.
3- 108°.
4- 127°.

472. Under the stated conditions above, the MAGNETIC HEADING from "A" to "B" is

L07
1- 063°.
2- 077°.
3- 052°.
4- 081°.

473. The estimated time enroute from "A" to "C" is (see Stated Conditions to the left)

L08
1- 1 hour 13 minutes.
2- 1 hour 19 minutes.
3- 1 hour 3 minutes.
4- 1 hour 29 minutes.

474. According to the conditions listed to the left, how much fuel would be used from "A" via "B" to "C"?

L08
1- 13.8 gallons.
2- 14.9 gallons.
3- 11.8 gallons.
4- 16.8 gallons.

475. Assume an airplane is serviced with 38 gallons of usable fuel, and an average groundspeed of 138 MPH is anticipated on a flight of 260 statute miles. At a rate of fuel consumption of 12 gallons per hour, what would be the maximum flying time available with the remaining fuel after arriving at your destination?

L08
1- 1 hour 2 minutes.
2- 2 hours 5 minutes.
3- 1 hour 17 minutes.
4- 2 hours 30 minutes.

476. If fuel consumption is 13.5 GPH, how much fuel will be used during a flight of 3 hours 20 minutes?

L08
1- 19.2 gallons.
2- 36.0 gallons.
3- 45.0 gallons.
4- 72.0 gallons.

477. GIVEN:

Wind from	350° @ 26 knots
True airspeed	110 MPH
True course	005°

Under these conditions the groundspeed would be approximately

L08
1- 110 MPH.
2- 139 MPH.
3- 81 MPH.
4- 150 MPH.

478. During a flight of 4 hours 21 minutes, how much fuel will be used if fuel consumption is 11.5 GPH?

L08
1- 46.0 gallons.
2- 64.0 gallons.
3- 76.5 gallons.
4- 50.0 gallons.

479. Consider the following data:

Distance . . . . . 260 statute miles
True course . . . . 110°
Cruise altitude . . 7,500 feet MSL
Wind at 7,500 feet . 010° @ 30 knots
True airspeed . . . 115 MPH
Fuel consumption . . 8 gals./hour

What would be the approximate groundspeed and amount of fuel consumed?

L08
1- 95 MPH and 21.8 gallons.
2- 112 MPH and 19.6 gallons.
3- 116 MPH and 17.9 gallons.
4- 128 MPH and 15.3 gallons.

480. GIVEN:

Distance . . . . . 295 statute miles
True course . . . . 005°
Cruise altitude . . 3,000 feet MSL
Wind at 3,000 feet . 175° @ 18 knots
True airspeed . . . 113 MPH
Fuel consumption . . 7 gals./hour

Based on the above information, what would be the approximate groundspeed and amount of fuel consumed?

L08
1- 120 MPH and 17.2 gallons.
2- 133 MPH and 15.4 gallons.
3- 128 MPH and 19.2 gallons.
4- 140 MPH and 14.3 gallons.

481. Assume you plan a flight based on the following information:

Distance . . . . . 190 statute miles
True course . . . . 308°
Cruise altitude . . 4,500 feet MSL
Wind at 4,500 feet . 205° @ 15 knots
True airspeed . . . 118 MPH
Fuel consumption . . 9 gals./hour

What would be the approximate groundspeed and amount of fuel consumed?

L08
1- 101 MPH and 17.0 gallons.
2- 103 MPH and 16.7 gallons.
3- 120 MPH and 14.2 gallons.
4- 133 MPH and 12.9 gallons.

482. GIVEN:

Indicated altitude . . . . . 8,000 feet
Outside air temperature . . . +10° C.
Indicated airspeed . . . . . 120 MPH

Based on the above data what is the true airspeed?

L08
1- 118 MPH.
2- 104 MPH.
3- 138 MPH.
4- 148 MPH.

483. GIVEN:

Outside air temperature . . +5° C.
Pressure altitude . . . . . 2,500 feet
Indicated airspeed . . . . 150 knots

Determine the true airspeed.

L08
1- 146 knots.
2- 164 knots.
3- 134 knots.
4- 154 knots.

484. You plan a flight of 95 statute miles at an anticipated groundspeed of 120 MPH. The airplane has 30 gallons usable fuel aboard, and the rate of fuel consumption is 8 gallons per hour. What will be the maximum flying time available with the remaining fuel when you arrive at your destination?

L08
1- 2 hours 40 minutes.
2- 1 hour 38 minutes.
3- 1 hour 15 minutes.
4- 2 hours 57 minutes.

485. Consider the following data:

Distance . . . . . 380 statute miles
True course . . . . 360°
Cruise altitude . . 8,500 feet MSL
Wind at 8,500 feet . 230° @ 40 knots
True airspeed . . . 139 MPH
Fuel consumption . . 10 gals./hour

What will be the approximate groundspeed and amount of fuel consumed?

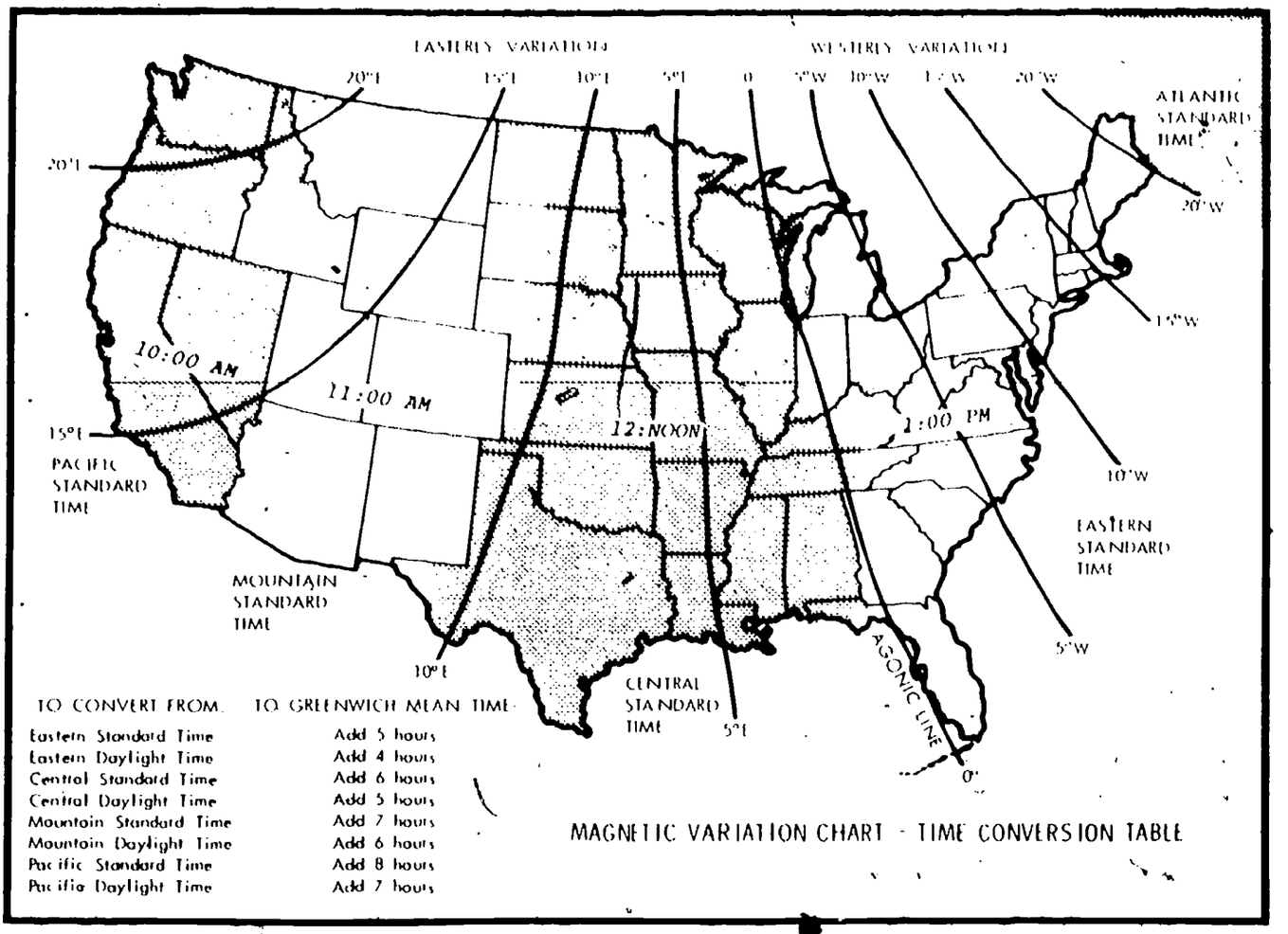
L08
1- 115 MPH and 28.6 gallons.
2- 127 MPH and 25.0 gallons.
3- 158 MPH and 22.1 gallons.
4- 163 MPH and 23.2 gallons.

486. GIVEN:

Flight duration . . . 4 hrs. 10 mins.
Rate of fuel consumption . . . . 9.6 GPH

How much fuel will be used?

L08
1- 40.0 gallons.
2- 36.6 gallons.
3- 65.5 gallons.
4- 25.6 gallons.



487. Refer to the illustration above. Assume you depart an airport in the Eastern Daylight Time Zone at 0945 EDT, for a 2 hour flight to an airport located in the Central Daylight Time Zone. At what Greenwich Mean Time would you expect to land?

L08
1- 1345Z.
2- 1445Z.
3- 1145Z.
4- 1545Z.

488. Assume that you depart an airport in the Central Standard Time Zone at 0930 CST, for a 2 hour flight to an airport located in the Mountain Standard Time Zone. What would the landing time be?

L08
1- 1130 MST.
2- 1230 MST.
3- 0930 MST.
4- 1030 MST.

NOTE: See Time Conversion data above.

489. Refer to the chart on the adjacent page. Assume that you depart an airport in the Pacific Standard Time Zone at 1030 PST, for a 4 hour flight to an airport located in the Central Standard Time Zone. At what Greenwich Mean Time would you expect to land?

L08
1- 2130Z.
2- 2230Z.
3- 2030Z.
4- 2330Z.

490. Assume that you depart an airport in the Central Standard Time Zone at 0730 CST, for a 3 hour flight to an airport located in the Mountain Standard Time Zone. What would the landing time be?

L08
1- 0930 MST.
2- 1000 MST.
3- 0830 MST.
4- 1030 MST.

NOTE: See Time Conversion data on adjacent page.

491. Refer to the illustration to the left. Suppose you depart an airport in the Mountain Standard Time Zone at 1615 MST, for a 2 hour 15 minute flight to an airport located in the Pacific Standard Time Zone. What would your estimated time of arrival be at the destination airport?

L08
1- 1830 PST.
2- 1930 PST.
3- 1630 PST.
4- 1730 PST.

492. Assume that you depart an airport in the Pacific Standard Time Zone at 1230 PST, for a 3 hour flight to an airport located in the Central Standard Time Zone. At what Greenwich Mean Time would you expect to land?

L08
1- 0030Z.
2- 2330Z.
3- 2130Z.
4- 1630Z.

NOTE: See Time Conversion data on adjacent page.

493. Select the true statement concerning characteristics of VHF radio reception.

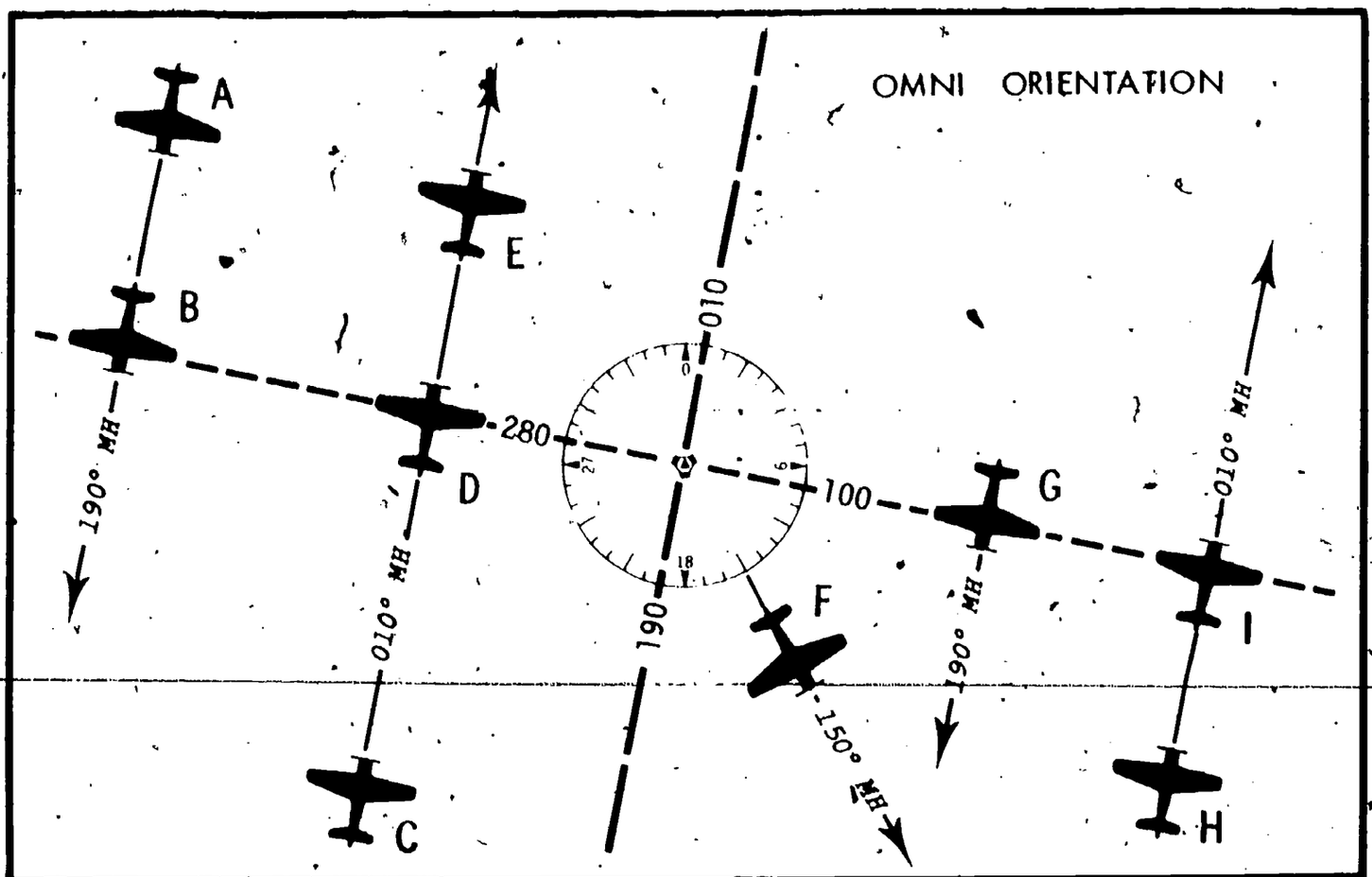
M01
1- VHF reception distance varies in proportion to the altitude of the receiving equipment.
2- Unlike reception with low or medium frequency (L/MF) equipment, VHF reception is not subject to line-of-sight restrictions.
3- VHF reception distance remains constant regardless of altitude.
4- Reception of VHF signals is more subject to signal fades and interference from distant stations than reception of low or medium frequency (L/MF) signals.

494. Refer to the illustration to the left. Suppose that you depart an airport in the Mountain Standard Time Zone at 1515 MST, for a 2 hour 30 minute flight to an airport located in the Pacific Standard Time Zone. What would your estimated time of arrival be at the destination airport?

L08
1- 1845 PST.
2- 2345 PST.
3- 1645 PST.
4- 1745 PST.

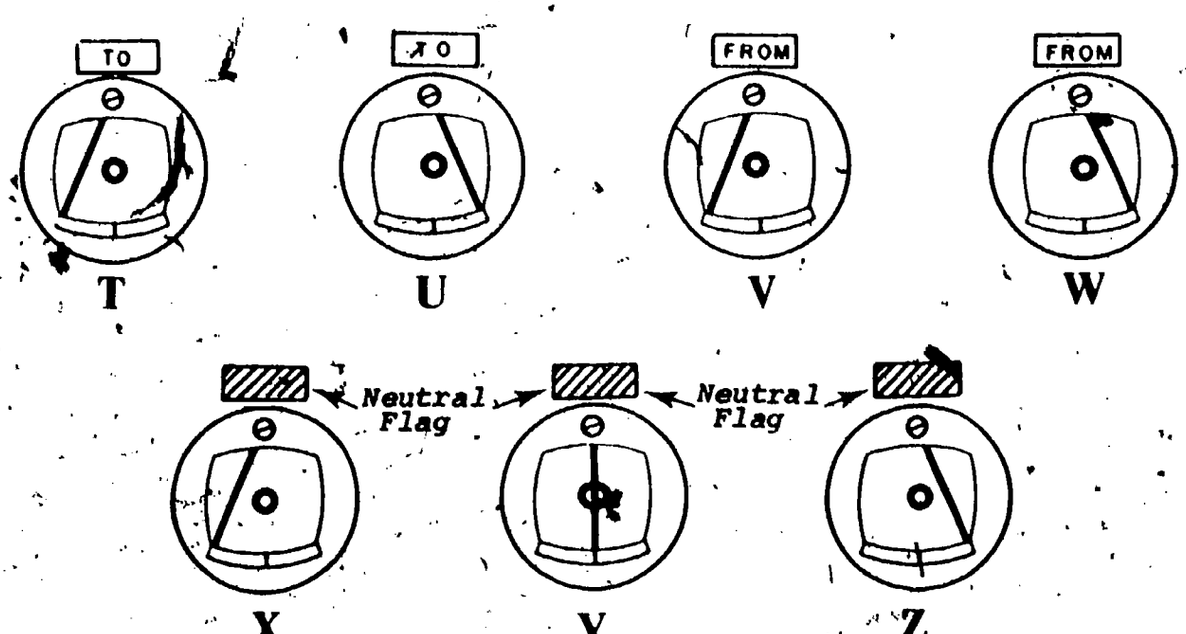
495. Refer to the illustration on the previous page. Assume that you depart an airport in the Central Daylight Time Zone at 0845 CDT, for a 2 hour flight to an airport located in the Mountain Daylight Time Zone. At what Greenwich Mean Time would you expect to land?

L08
1- 1545Z.
2- 1645Z.
3- 1345Z.
4- 1445Z.



OMNI INDICATIONS

NOTE: ASSUME ALL OMNI BEARING SELECTORS ARE SET TO 010°.



496. Refer to the illustrations to the left. At which airplane position(s) would you receive omni indication "T"?

M04
1- A, C, and H.
2- H only.
3- F and H.
4- C only.

497. Refer to the adjacent illustrations. The omnireceiver indications at airplane positions "H" and "I" would be, respectively,

M04
1- V and X.
2- T and Y.
3- U and Z.
4- T and X.

498. Refer to the adjacent illustrations. Which of the airplanes shown would have omni indication "Z"?

M04
1- D only.
2- B and D.
3- G and I.
4- G only.

499. Refer to the adjacent illustrations. The omnireceiver indications for airplane positions C, D, and E would be, respectively,

M04
1- U, Z, W.
2- U, Y, V.
3- T, X, V.
4- U, Y, W.

500. Refer to the illustrations to the left. Which of the airplanes shown would have omni indication "T"?

M04
1- F and H.
2- H only.
3- H and I.
4- F, G, H, and I.

501. Refer to the adjacent illustrations. Which of the airplanes shown would have omni indication "X"?

M04
1- I only.
2- B and D.
3- G and I.
4- B and I.

502. Refer to illustrations on opposite page. If your omnireceiver was functioning properly and you were receiving indication "Y", what would your position be in relation to the omni station?

M04
1- Directly over the station.
2- At position B or G.
3- At position I.
4- At position D.

503. Refer to illustrations on opposite page. At which airplane position(s) would you receive omni indication "X" or "Z"?

M04
1- B, D, G, and I.
2- F only.
3- B and G.
4- D and I.

504. Refer to the illustrations to the left. At which airplane position(s) would you receive omni indication "X"?

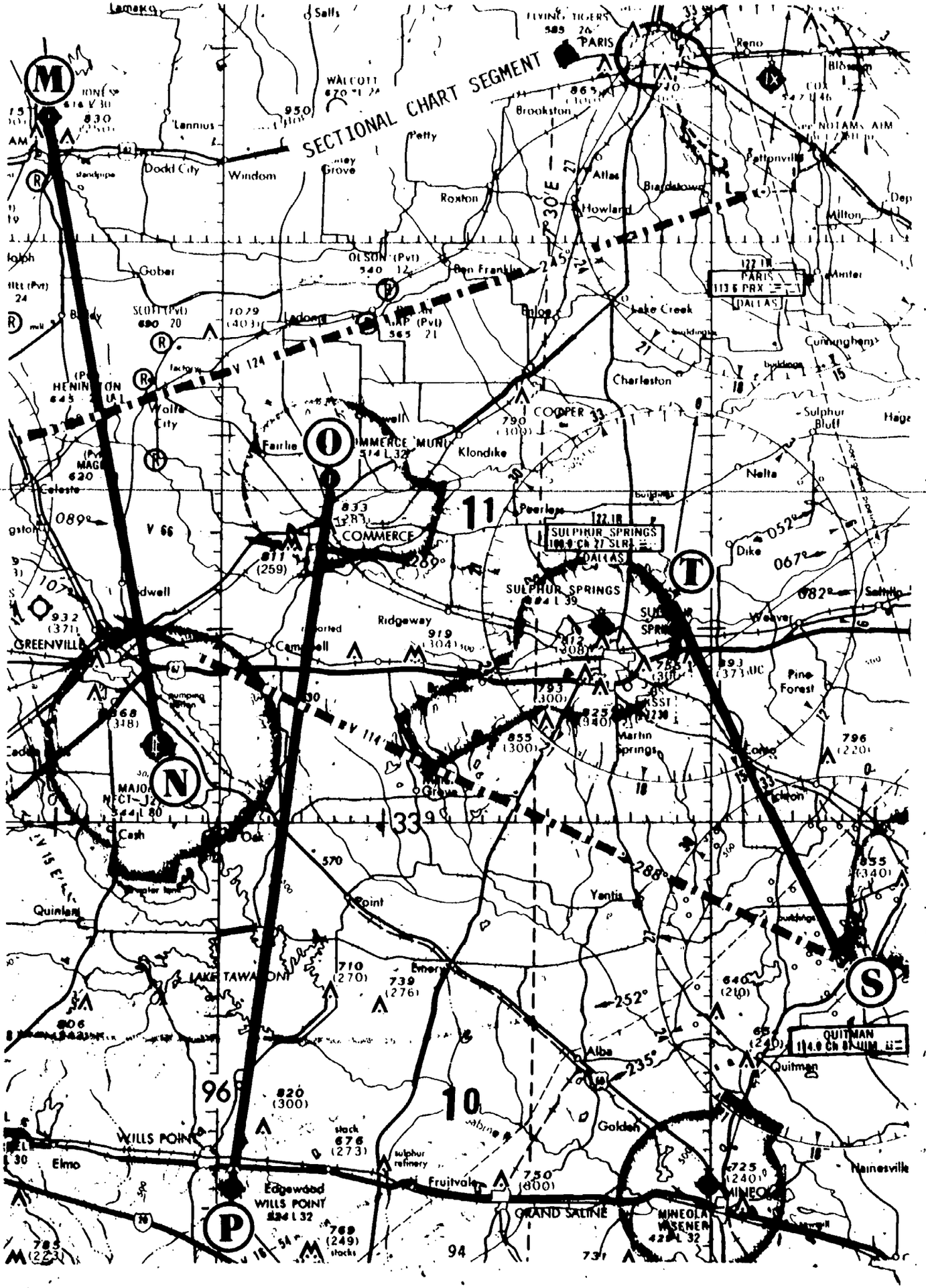
M04
1- G and I.
2- B and D.
3- I only.
4- B only.

505. Refer to illustrations on opposite page. At which airplane position(s) would you receive omni indication "W"?

M04
1- D and E.
2- A and E.
3- E only.
4- F and H.

506. Refer to the illustrations on opposite page. At which airplane position(s) would you receive omni indication "Z"?

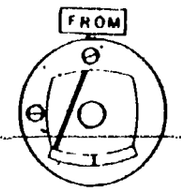
M04
1- E only.
2- G and I.
3- I only.
4- B and D.


SECTIONAL CHART SEGMENT
PARIS
SULPHUR SPRINGS
COMMERCE
GREENVILLE
WILLS POINT
QUITMAN
MINEOLA
GRAND SALINE
LAKE TAWAKONI
DALLAS
M
N
O
P
S
T

507. Refer to the adjacent page. Assume that you are enroute from point "S" to point "T," with the omnireceiver tuned to Sulphur Springs VORTAC (point "T"). What should the omnibearing selector be set to, and what should the TO-FROM indicator read, respectively?

M04
1- 147° and TO.
2- 327° and FROM.
3- 147° and FROM.
4- 327° and TO.

508. On course from airport "N" to airport "M" (see adjacent page), you tune in Paris VOR to check your progress. If the omnibearing selector is set to 245° and the omnireceiver component shows as indicated below, you have



M05
1- already crossed the Paris 065 radial.
2- a malfuhctioning omnireceiver since the Paris VOR is to the right of course.
3- already crossed the 245 radial (V-124).
4- not crossed the 245 radial (V-124).

509. Refer to the adjacent page. While on course from airport "P" to airport "O" you tune the omnireceiver to Quitman VORTAC to check your progress along the route. The omnibearing selector is set to 288° (V-114). Which of the following statements is true concerning the indications of the Course Deviation Indicator (CDI needle) and the TO-FROM indicator?

M05
1- The omnibearing selector should have been set to 114°.
2- Prior to reaching V-114 with a FROM indication the CDI needle would be deflected to the left.
3- After crossing V-114 the CDI needle would be centered with a TO indication.
4- Prior to reaching V-114 with a FROM indication the CDI needle would be deflected to the right.

510. Refer to the opposite page. While on course from airport "O" to airport "P," you tune the omnireceiver to Quitman VORTAC to check your progress along the route. With the omnibearing selector set to 288° (V-114) and the TO-FROM indicator reading FROM, the Course Deviation Indicator (CDI needle) shows a full-scale deflection to the right. This means that you

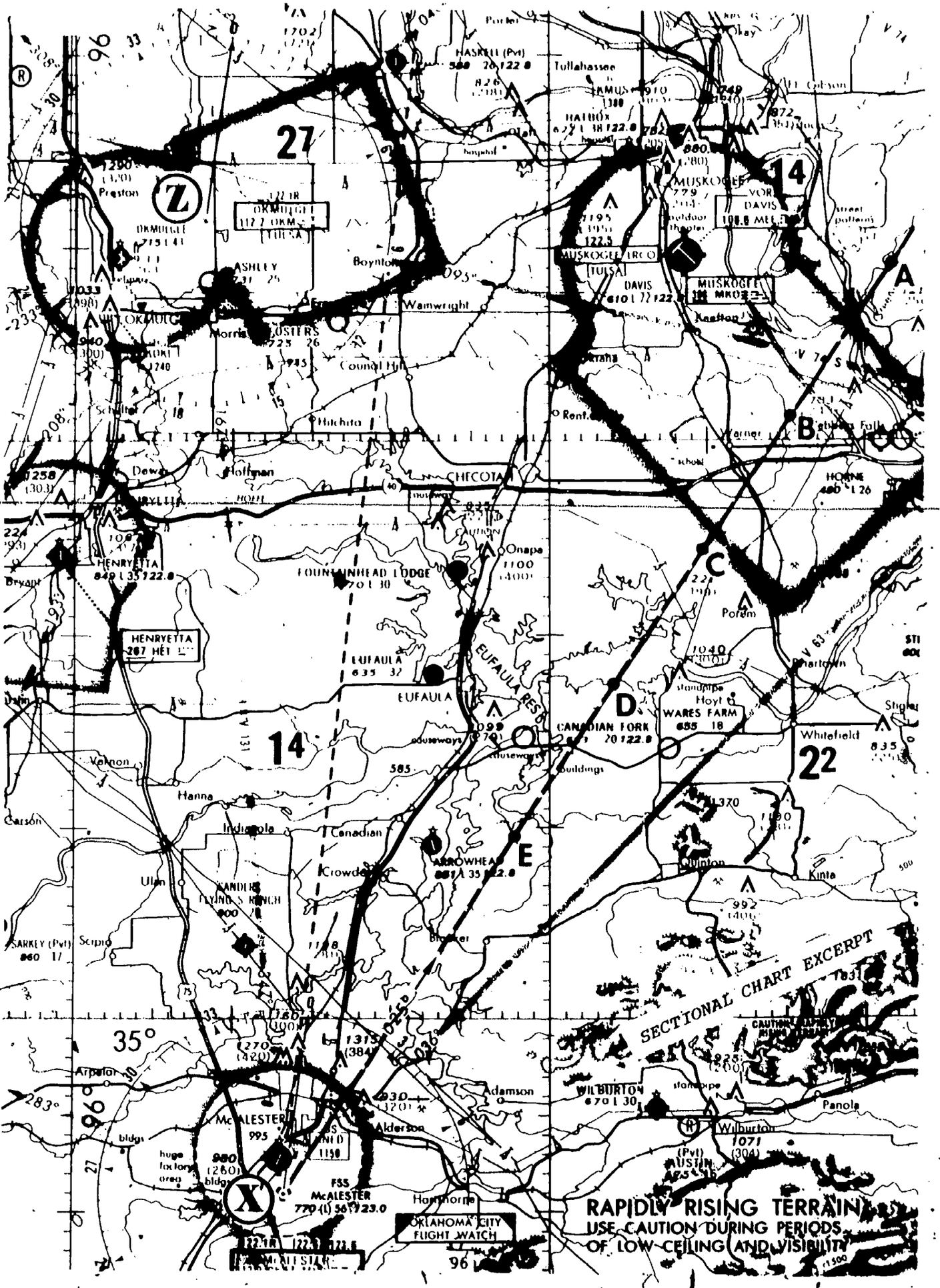
M05
1- have not crossed the 288 radial (V-114).
2- have a malfunction in your omni equipment since Quitman VORTAC is to the left of course.
3- have already crossed the 288 radial (V-114).
4- are not using a proper method of determining your position.

511. To check your progress on course from airport "M" to airport "N" (see opposite page), you tune to the Paris VOR. With the omnibearing selector set to 245° (V-124) and the TO-FROM indicator reading FROM, the Course Deviation Indicator (CDI needle) shows a full-scale deflection to the right. This means that you

M05
1- have not crossed the 245 radial (V-124).
2- have a malfunction in your omni equipment since Paris VOR is to the left of course.
3- have already crossed the 245 radial (V-124).
4- are not using a proper method of determining your position.

512. To check your progress on course from airport "N" to airport "M" (see opposite page), you tune to the Paris VOR. With the omnibearing selector set to 245° (V-124) and the TO-FROM indicator reading FROM, the Course Deviation Indicator (CDI needle) shows a full-scale deflection to the right. This means that you

M05
1- are presently on the 245 radial (V-124).
2- are not using a proper method of determining your position.
3- have not crossed the 245 radial (V-124).
4- have already crossed the 245 radial (V-124).


SECTIONAL CHART EXCERPT
RAPIDLY RISING TERRAIN
USE CAUTION DURING PERIODS
OF LOW CEILING AND VISIBILITY
OKLAHOMA CITY
FLIGHT WATCH
FSS
McALESTER
HENRYETTA
EUFAULA
CANADIAN FORK
WARES FARM
WILBURTON
MUSKOGEE
DAVIS
CHECOTAH
FOUNTAINHEAD LODGE
EUFAULA RESV
ARROWHEAD
SANDERS
FLYING S RANCH
AUSTIN
ARS
Z
X
27
14
22
35°

513. Refer to the adjacent chart. While flying westbound, your omnireceiver indicates crossing the 025 radial of the McAlester VORTAC (X). You have another receiver tuned to Okmulgee VOR (Z), with the omnibearing selector set to 085°, the CDI needle is centered, and the TO-FROM indicator reads "FROM". Your position is at point

M05
1- B.
2- C.
3- A.
4- D.

514. Refer to the adjacent chart. Assume that you are flying outbound from McAlester VORTAC (X) on the 025 radial. Which radial of Okmulgee VOR (Z) intersects your course at point "C"?

M05
1- 110 radial.
2- 115 radial.
3- 100 radial.
4- 295 radial.

515. Refer to the adjacent chart. Assume you are inbound on the 025 radial of McAlester VORTAC (X). If you have another receiver tuned to Okmulgee VOR (Z), what radial of this VOR should be used to determine when point E is reached?

M05
1- 325 radial.
2- 145 radial.
3- 130 radial.
4- 115 radial.

516. Refer to the chart to the left. While flying westbound, one omnireceiver indicates you are crossing the 025 radial of McAlester VORTAC (X). Another receiver tuned to Okmulgee VOR (Z), indicates you are on the 130 radial of this VOR. Your position is

M05
1- at point E.
2- directly over McAlester VORTAC.
3- at point C.
4- at point D.

517. Refer to the chart to the left. Assume that you are flying outbound on the 025 radial of McAlester VORTAC (X). You have another omnireceiver tuned to Okmulgee VOR (Z), with the omnibearing selector set to 105°, the CDI needle is centered, and the TO-FROM indicator reads "FROM". Your position is between points

M05
1- B and C.
2- C and D.
3- A and B.
4- D and E.

518. Refer to the chart to the left. While flying westbound, one omnireceiver indicates you are crossing the 025 radial of McAlester VORTAC (X). Another receiver is tuned to Okmulgee VOR (Z), with the omnibearing selector set to 115°, the CDI needle is centered, and the TO-FROM indicator reads "FROM". Your position is at point

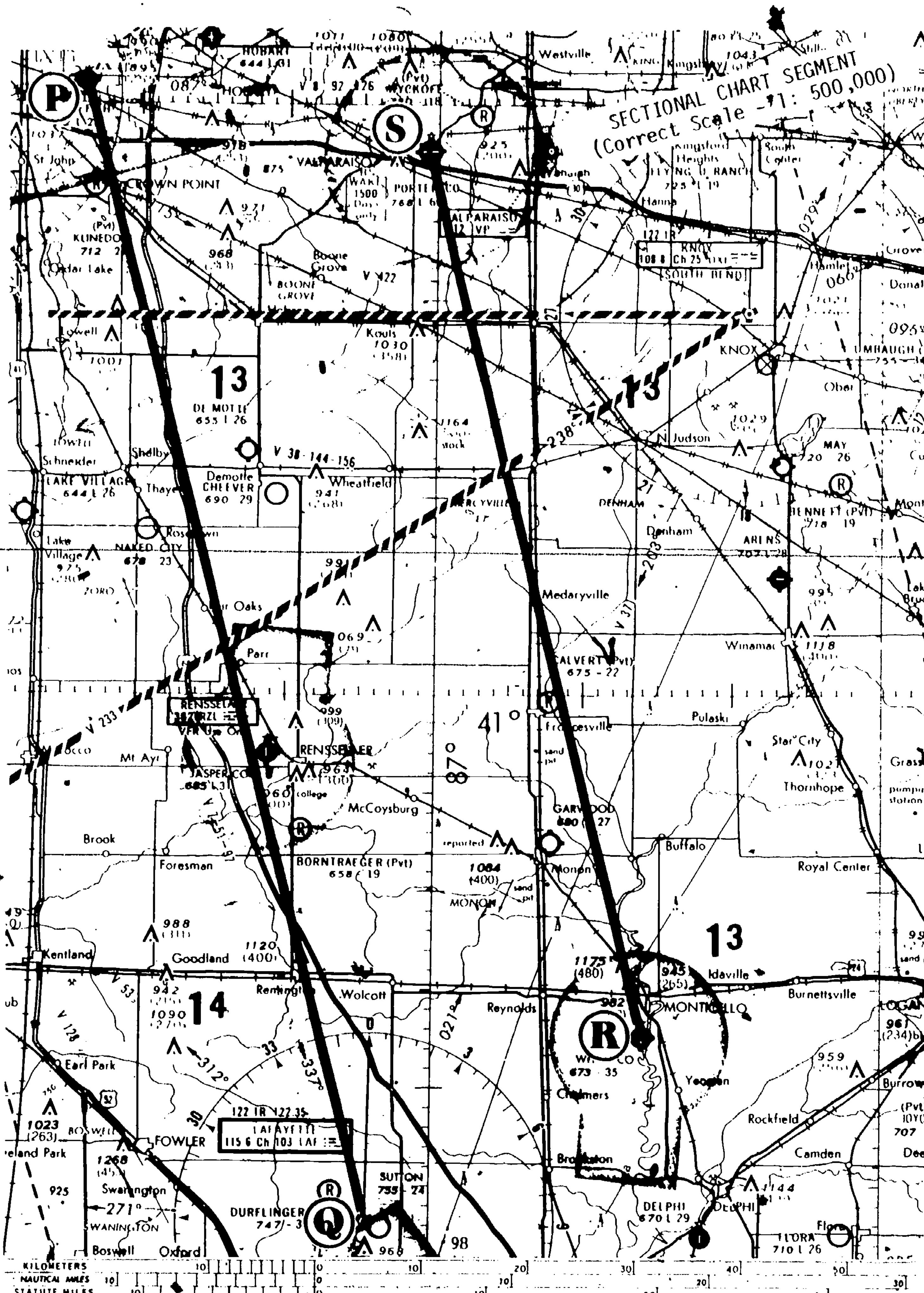
M05
1- B.
2- C.
3- A.
4- D.

519. Refer to the chart to the left. While flying eastbound, one omnireceiver indicates you are crossing the 025 radial of McAlester VORTAC (X). Another receiver tuned to Okmulgee VOR (Z), indicates you are on the 145 radial of this VOR. Your position is at point

M05
1- C.
2- D.
3- B.
4- E.

520. Refer to the chart to the left. Assume you are inbound on the 025 radial of McAlester VORTAC (X). If you have another receiver tuned to Okmulgee VOR (Z), what radial of this VOR should the omnibearing selector be set to for determining when you reach point "D"?

M05
1- 130 radial.
2- 145 radial.
3- 115 radial.
4- 310 radial.



SECTIONAL CHART SEGMENT
(Correct Scale -1: 500,000)
P
S
R
Q
HOBART
Westville
VALPARAISO
PORTER CO
CROWN POINT
St John
KLINEDO
Cedar Lake
Boone Grove
BOONE GROVE
KNOX
SOUTH BEND
Hanna
Lowell
Kouts
KNOX
13
DE MOTTE
Schneider
Shelby
LAKE VILLAGE
Demotte
CHEEVER
Wheatfield
N Judson
Obar
MAY
DENHAM
Denham
ARENS
Roselawn
NAKED CITY
Lake Village
Medaryville
Winamac
Parr
CALVERT (Pvt)
RENSSELAER
Francesville
Pulaski
Star City
41°
87°
Mt Ayr
JASPER CO
McCoysburg
GARWOOD
Thornhope
Brook
Foresman
BORNTRAEGER (Pvt)
Buffalo
Monon
MONON
Royal Center
13
Kentland
Goodland
Remington
Wolcott
Reynolds
Idaville
MONTICELLO
Burnettsville
14
Earl Park
Yeoman
Chalmers
Rockfield
FOWLER
LAFAYETTE
Camden
Swanington
DURFLINGER
SUTTON
DELPHI
FLORA
Boswell
Oxford
KILOMETERS
NAUTICAL MILES
STATUTE MILES

521. Refer to the adjacent Sectional Chart excerpt. While on course from airport "S" to airport "R" you note that you crossed the 270 radial of Knox VORTAC at 1408 CST and the 238 radial 5 minutes later. By maintaining the same groundspeed your arrival time over airport "R" should be approximately

M07
1- 1413 CST.
2- 1427 CST.
3- 1432 CST.
4- 1435 CST.

522. Refer to the adjacent Sectional Chart excerpt. While on course from airport "S" to airport "R" you note that you crossed the 270 radial of Knox VORTAC at 1410 CST and the 238 radial 4 minutes later. By maintaining the same groundspeed your arrival time over airport "R" should be approximately

M07
1- 1415 CST.
2- 1422 CST.
3- 1426 CST.
4- 1429 CST.

523. Assume that you desire to fly inbound to a VOR station on the 300 radial. The recommended procedure is to set the course selector to

M06
1- 120° and make heading corrections toward the Course Deviation Indicator (CDI needle).
2- 120° and make heading corrections away from the Course Deviation Indicator (CDI needle).
3- 300° and make heading corrections toward the Course Deviation Indicator (CDI needle).
4- 300° and make heading corrections away from the Course Deviation Indicator (CDI needle).

524. You wish to track inbound on the 050 radial of a VOR station. The recommended procedure is to set the course selector to

M06
1- 050° and make heading corrections toward the Course Deviation Indicator (CDI needle).
2- 230° and make heading corrections away from the Course Deviation Indicator (CDI needle).
3- 050° and make heading corrections away from the Course Deviation Indicator (CDI needle).
4- 230° and make heading corrections toward the Course Deviation Indicator (CDI needle).

525. Refer to the chart to the left. While on course from airport "S" to airport "R" you note that you crossed the 270 radial of Knox VORTAC at 1512 CST and the 238 radial 4 minutes later. By maintaining the same groundspeed your arrival time over airport "R" should be approximately

M07
1- 1531 CST.
2- 1535 CST.
3- 1527 CST.
4- 1538 CST.

526. Refer to the opposite page. While on course from Lafayette VORTAC (point "Q") to airport "P," you tune one omnireceiver to Knox VORTAC. You note that you crossed the 238 radial of Knox VORTAC at 0810 CST and the 270 radial 13 minutes later. By maintaining the same groundspeed your arrival time over airport "P" should be approximately

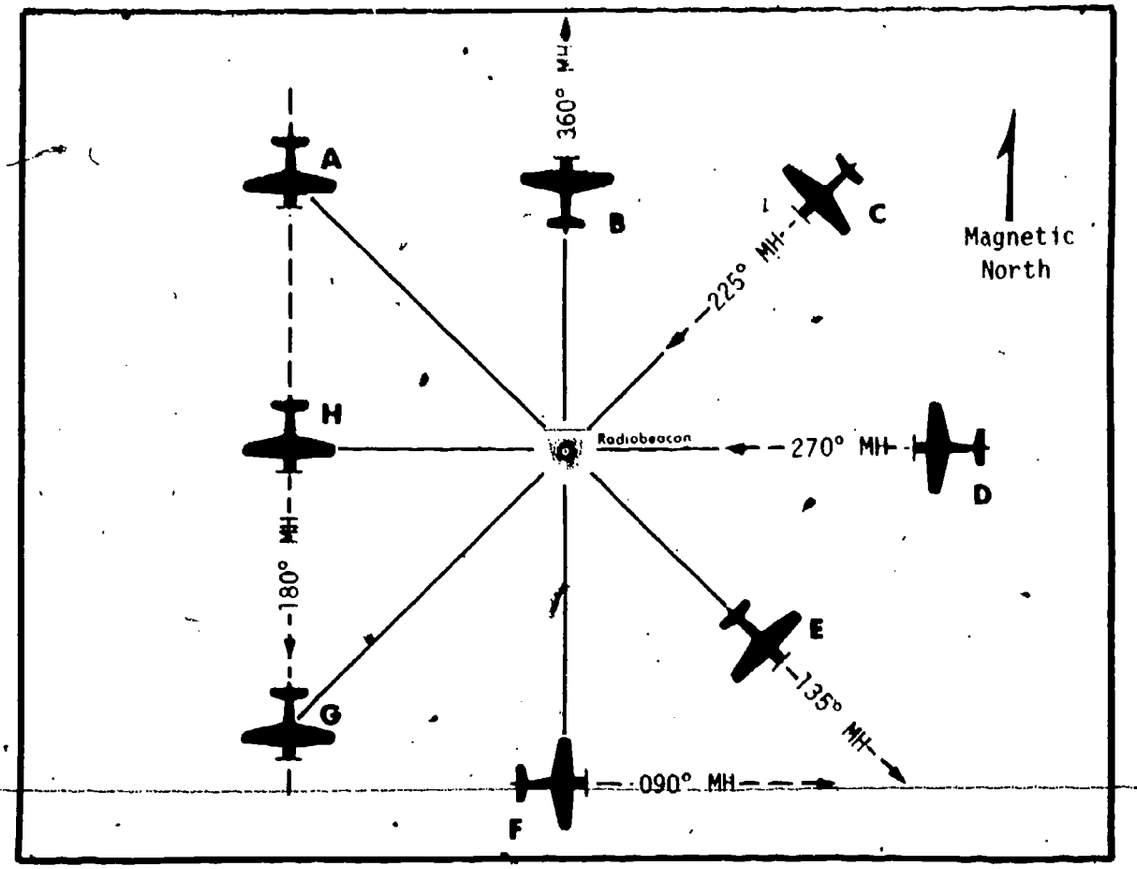
M07
1- 0819 CST.
2- 0823 CST.
3- 0832 CST.
4- 0836 CST.

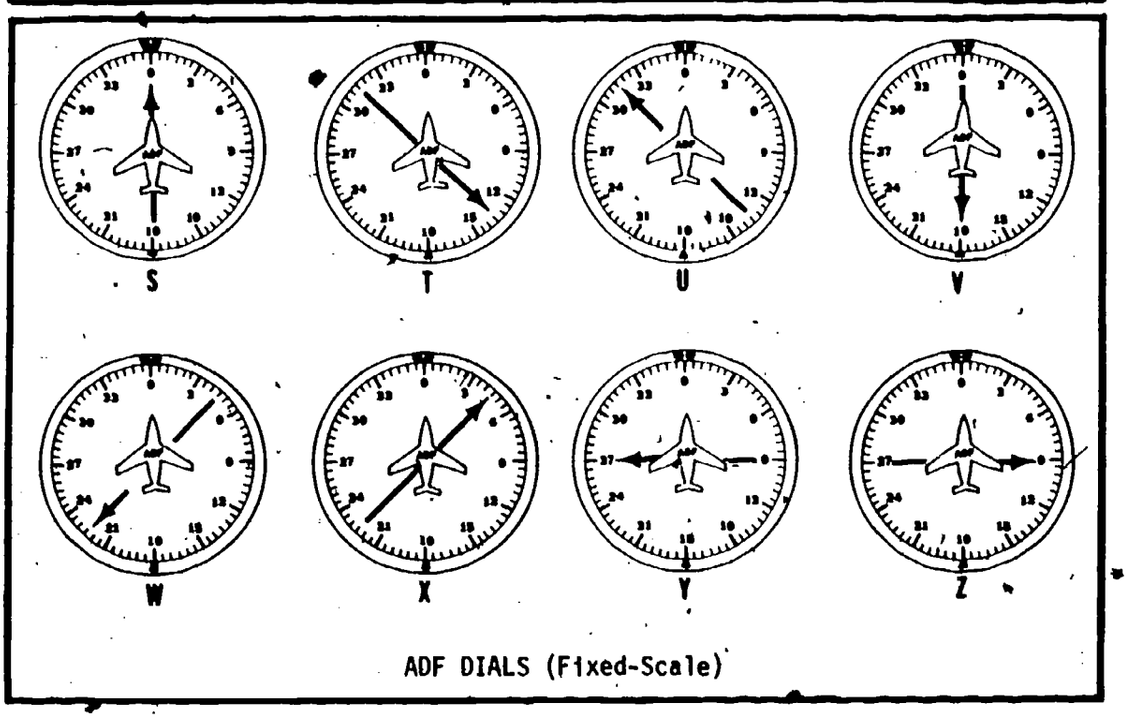
527. Refer to the opposite page. While on course from airport "P" to Lafayette VORTAC (point "Q"), you tune one omnireceiver to Knox VORTAC. You crossed the 270 radial of Knox VORTAC at 1000 CST and crossed the 238 radial 10 minutes later. By maintaining the same groundspeed you should arrive over Lafayette VORTAC at approximately

M07
1- 1010 CST.
2- 1020 CST.
3- 1027 CST.
4- 1018 CST.

528. Refer to the chart to the left. While on course from airport "P" to Lafayette VORTAC (point "Q"), you tune one omnireceiver to Knox VORTAC. You note that you crossed the 270 radial of Knox VORTAC at 1103 CST and the 238 radial 8 minutes later. By maintaining the same groundspeed your arrival time over Lafayette VORTAC should be approximately

M07
1- 1125 CST.
2- 1111 CST.
3- 1117 CST.
4- 1132 CST.





ADF DIALS (Fixed-Scale)

529. Assume you were flying on a magnetic heading of 180° as depicted by aircraft positions A, H, and G above. Match the ADF indications that you would most likely have at each position.

M13
1- A-X; H-S; G-T.
2- A-W; H-V; G-U.
3- A-U; H-Y; G-W.
4- A-T; H-Z; G-X.

530. Refer to the above illustrations. At which of the aircraft position(s) would you expect to receive the ADF indication "S"?

M13
1- B and E.
2- F only.
3- C and D.
4- B and D.

531. Refer to the illustrations to the left. Which ADF indication would the pilot most likely have at aircraft position "D"?

M13
1- S.
2- V.
3- Z.
4- Y.

532. Refer to the illustrations to the left. Which ADF indication would you most likely have at aircraft position "B"?

M13
1- Z.
2- Y.
3- V.
4- S.

533. Refer to the illustrations to the left. Which ADF indication would you most likely have at aircraft position "A"?

M13
1- U.
2- W.
3- T.
4- X.

534. Refer to the illustrations to the left. Which aircraft would most likely depict your position if the ADF is indicating as illustrated by dial "W"?

M13
1- A.
2- C.
3- G.
4- H.

535. Refer to the illustrations to the left. Which ADF indication would the pilot most likely have at aircraft position "C"?

M13
1- X.
2- W.
3- V.
4- S.

536. Refer to the illustrations to the left. Which ADF indication would the pilot most likely have at aircraft position "C"?

M13
1- U.
2- W.
3- T.
4- Y.

537. According to ADF dial indication "U" (opposite page), you would be headed directly toward the station if you turned

M13
1- 45° to the right.
2- 45° to the left.
3- 330° to the left.
4- 135° to the right.

538. According to ADF dial indication "Y" (opposite page), you would be headed directly toward the station if you turned

M13
1- 90° to the left.
2- 180° to the left.
3- 90° to the right.
4- 270° to the left.

539. Refer to the illustrations to the left. Which ADF dial indication would the pilot most likely have at aircraft positions "C" and "D"?

M13
1- S.
2- Y.
3- W.
4- X.

540. Refer to the illustrations to the left. At which of the aircraft position(s) would you expect to receive the ADF dial indication "V"?

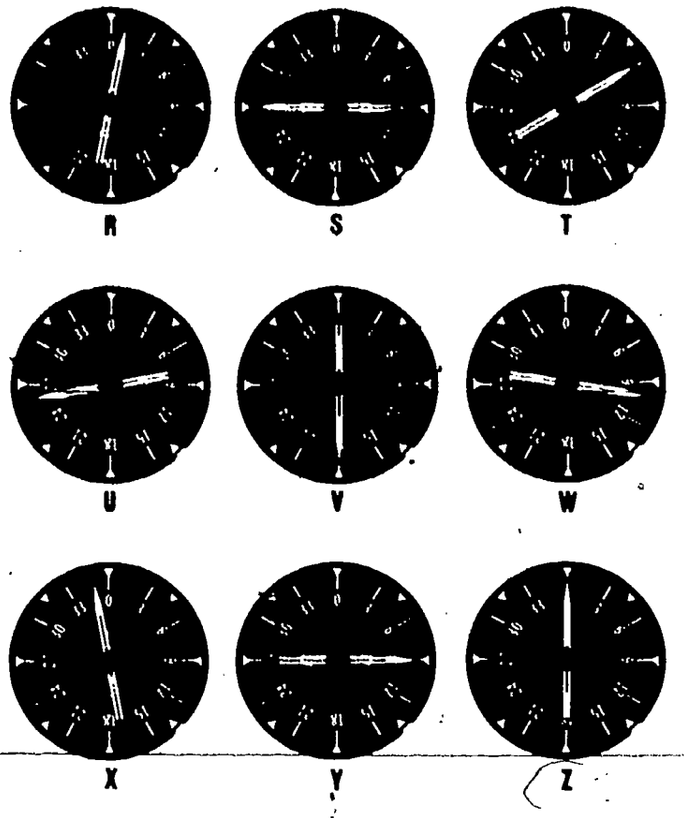
M13
1- A and G.
2- B only.
3- C and D.
4- B and E.

541. Refer to the illustrations to the left. Which aircraft would most likely depict your position if the ADF indicated as illustrated by dial "Y"?

M13
1- D only.
2- F and H.
3- D and H.
4- A and G.

542. Refer to the illustrations to the left. Which ADF indication would the pilot most likely have at aircraft position "H"?

M13
1- V.
2- Y.
3- S.
4- Z.



ADF DIALS (Fixed-Scale)

543. Refer to ADF dial indication "U" above. To fly to the station it would be necessary to

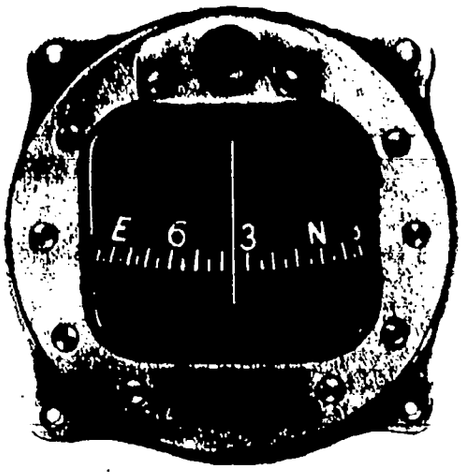
M13
1- turn 260° to the left.
2- turn approximately 100° to the left.
3- turn approximately 100° to the right.
4- maintain a magnetic heading of 260°.

544. If the magnetic heading is 075°, and ADF illustration "T" above is observed, what is the magnetic bearing to the station?

M13
1- 135°.
2- 240°.
3- 015°.
4- 315°.

545. If ADF dial "Y" above is observed, and the magnetic heading is 180°, what is the magnetic bearing to the station?

M13
1- 180°.
2- 270°.
3- 090°.
4- 360°.



Magnetic Compass

546. Refer to ADF dial "Z" and the magnetic compass illustration above. The MAGNETIC BEARING to the station is

M13
1- 180°.
2- 325°.
3- 035°.
4- 360°.

547. According to the magnetic compass illustration and ADF dial "W" above, the MAGNETIC BEARING to the station is

M13
1- 100°.
2- 135°.
3- 035°.
4- 235°.

548. Refer to ADF dial "V" and the magnetic compass above. The MAGNETIC BEARING to the station is

M13
1- 180°.
2- 215°.
3- 145°.
4- 360°.

549. According to ADF dial "S" and the magnetic compass above, the MAGNETIC BEARING to the station is

M13
1- 090°.
2- 235°.
3- 270°.
4- 305°.

550. Refer to the magnetic compass above and ADF dial "R". The MAGNETIC BEARING to the station is

M13
1- 025°.
2- 035°.
3- 010°.
4- 045°.

§ **RAPID CITY REGIONAL** (RAP) 7 E SE GMT 7(6DT) 44°02'36"N 103°03'26"W CHEYENNE
3182 B S4 FUEL 100, JET A OX 1 CFR Index B H-1E, L-9D, 11A
RWY 14-32: H7422X150 (ASPH) S 120, D 148, DT 220 HIRL WP
RWY 14: REIL, VASI RWY 32: MALSR
RWY 01-19: 2200X200 (TURF)
AIRPORT REMARKS: Attended 1300 0600Z‡ Rwy lgts opr dusk 0600Z‡ For rwy lgts 0600-1300Z‡ ctc FSS Porous friction course Rwy 14-32 entire length and width S 2200' Rwy 1-19 open on req only
COMMUNICATIONS: UNICOM 123.0
RAPID CITY FSS (RAP) on arpt 122.65 122.2 122.1R 112.3T (605) 342-2280
(H) ELLSWORTH APP CON 119.5 126.3
TOWER 118.7 opr 1300-0600Z‡. FSS provides AAS on 118.7 when ATCT clsd GND CON 121.9
(H) ELLSWORTH DEP CON 119.5 126.3
STAGE II SVC ctc APP CON on 119.5
RADIO AIDS TO NAVIGATION:
(H) VORTAC 112.3 RAP Chan 70 43°58'34"N 103°00'43"W 322° 3.8 NM to fld
NDB (H) 284 e RAP 44°03'16"N 103°05'33"W 103° 1.7 NM to fld
ILS 109.3 I RAP Rwy 32

551. To contact Rapid City Flight Service Station for enroute weather information (see excerpt above), you should transmit on

N07
1- 254 kHz.
2- 119.5 MHz.
3- 112.3 MHz.
4- 122.2 MHz.

552. Takeoff clearance at Rapid City Regional Airport (see excerpt above) should be obtained by transmitting and receiving on

N07
1- 119.5 MHz.
2- 121.9 MHz.
3- 118.7 MHz.
4- 122.8 MHz.

553. Refer to the excerpt above. To obtain taxi instructions at Rapid City Regional Airport, you should transmit and receive on what frequency?

N07
1- 119.5 MHz.
2- 121.9 MHz.
3- 118.7 MHz.
4- 125.3 MHz.

554. After landing at a tower-controlled airport when should you contact ground control?

N03
1- Prior to turning off the runway.
2- After reaching a taxi strip that leads directly to the parking area.
3- After leaving the runway and crossing the runway holding lines.
4- When the tower instructs you to do so.

555. What effect would FROST have on airplane performance?

009
1- It may prevent an airplane from becoming airborne.
2- It may cause an airplane to become airborne sooner than anticipated.
3- None, if the pilot's visibility through the windshield is unrestricted.
4- It may enable the engine to be overboosted during takeoff.

556. Frost which has not been removed from the wings of an airplane before flight

009
1- may cause the airplane to become airborne with a lower angle of attack and at a lower indicated airspeed.
2- may make it difficult or impossible to become airborne.
3- would present no problems since frost will blow off when the airplane starts moving during takeoff.
4- will change the camber (curvature of the wing) thereby increasing lift during takeoff.

557. Refer to the excerpt above. The proper sequence of radio frequencies to be used at Rapid City Regional Airport to contact ground control, the tower, and then the FSS would be-

N07
1- 121.9, 119.5, 121.5 MHz.
2- 121.9, 118.7, 122.2 MHz.
3- 119.5, 118.7, 122.1R MHz.
4- 118.7, 121.9, 112.3 MHz.

558. The phenomenon of "ground effect" is most likely to result in which of the following problems in an airplane?

014
1- Settling back to the surface abruptly immediately after becoming airborne.
2- Becoming airborne before reaching recommended takeoff speed.
3- Inability to get airborne even though airspeed is sufficient for normal takeoff needs.
4- A rapid rate of sink and absence of normal cushioning during landings.

559. An airplane is usually affected by "ground effect" at what height above the surface?

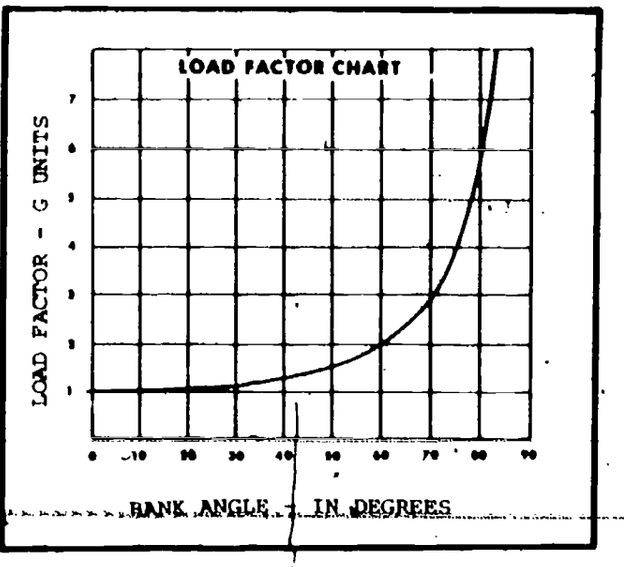
014
1- Between 100 and 200 feet above the surface in calm wind conditions.
2- Less than half of the airplane's wingspan above the surface.
3- Twice the length of the airplane's wingspan above the surface.
4- Three or four times the airplane's wingspan.

560. Select the true statement regarding "ground effect."

014
1- Ground effect may cause an airplane to float on landings or permit it to become airborne with insufficient power to sustain flight outside of the area of ground effect.
2- Light single-engine airplanes usually encounter "ground effect" at 200 or 300 feet above the surface.
3- In conditions of high gross weight, high density altitude, and high temperature an airplane will usually not encounter "ground effect."
4- Ground effect often causes an airplane to settle to the surface immediately after becoming airborne.

561. Refer to the chart to the right above. If the airplane has a maximum positive load factor of +3.8 G units, the maximum bank which could be made in a level turn without exceeding this load factor would be

017
1- unobtainable from the Load Factor Chart.
2- approximately 82°.
3- approximately 74°.
4- approximately 67°.



562. Use the chart above. If an airplane weighs 2,300 lbs., what approximate weight would the airplane structure be required to support during a 60° banked turn while maintaining altitude?

017
1- 3,400 lbs.
2- 4,600 lbs.
3- 2,300 lbs.
4- 5,200 lbs.

563. If an airplane weighs 5,400 lbs., what approximate weight would the airplane structure be required to support during a 55° banked turn while maintaining altitude?

017
1- 5,400 lbs.
2- 6,720 lbs.
3- 9,180 lbs.
4- 10,800 lbs.

NOTE: Use chart above.

564. Use the chart above. If an airplane weighs 3,300 lbs., what approximate weight would the airplane structure be required to support during a 30° banked turn while maintaining altitude?

017
1- 3,100 lbs.
2- 3,960 lbs.
3- 1,200 lbs.
4- 7,220 lbs.

565. Refer to the chart above. The maximum positive load factor for a particular airplane in the utility category is +4.4 G units. The maximum bank which could be made during a level turn without exceeding this load factor would be approximately

017
1- 67°.
2- 77°.
3- 82°.
4- 72°.

566. If an airplane weighs 3,100 lbs., what approximate weight would the airplane structure be required to support during a 40° banked turn while maintaining altitude?

017
1- 3,250 lbs.
2- 3,720 lbs.
3- 4,030 lbs.
4- 4,560 lbs.

NOTE: Use chart to the left.

567. Suppose an airplane is loaded 110 lbs. over maximum certificated gross weight. If you choose to drain fuel (gasoline) to bring the aircraft weight within limits, how much fuel would you drain?

017
1- 16.2 gallons.
2- 18.4 gallons.
3- 15.7 gallons.
4- 17.1 gallons.

568. If an airplane is loaded 90 lbs. over maximum certificated gross weight, and fuel (gasoline) is drained to bring the aircraft weight within limits, how much fuel should be drained?

017
1- 9 gallons.
2- 12 gallons.
3- 6 gallons.
4- 15 gallons.

569. Which statement is true regarding stalls?

019
1- An airplane can be stalled only when the nose is high and the airspeed is low.
2- An airplane can be stalled only when the airspeed decreases to the published stalling speed.
3- An airplane can be stalled only when the nose is too high in relation to the horizon.
4- An airplane can be stalled at any airspeed and in any flight attitude.

570. As you maneuver an airplane in the traffic pattern, you should realize that an airplane can be stalled

019
1- only when the nose is high and the airspeed is low.
2- only when the airspeed decreases to the published stalling speed.
3- at any airspeed and in any flight attitude.
4- only when the nose is too high in relation to the horizon.

571. What aerodynamic condition causes an airplane to spin?

019
1- When the ailerons lose their effectiveness due to a decrease in relative wind and the airplane begins to roll.
2- When one wing is producing effective lift while the other wing is stalled.
3- When the yaw force of the rudder causes the airplane to roll and the forward center of gravity limit is exceeded.
4- When the elevators lose their effectiveness due to a decrease in relative wind.

572. To enter a spin, an airplane must first and always be

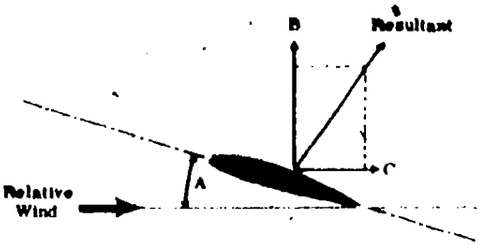
019
1- partially stalled with one wing low and the throttle closed.
2- placed in a steep diving spiral.
3- stalled.
4- placed in a steep nose-high pitch attitude.

573. Will a properly rigged single-engine airplane roll when stalled, with cruising power, in a slipping steep turn to the right?

019
1- Yes, but only if additional power is applied during the recovery.
2- Yes; it will roll to the left.
3- Yes; it will roll to the right.
4- No; it will remain in the steep turn attitude.

574. If, while turning from base leg to final approach for landing, it becomes necessary to increase the bank to an angle of 40°, you should be aware that an airplane can be stalled

019
1- only at low airspeeds or when the angle of bank is greater than 50°.
2- in any flight attitude at any airspeed.
3- only during nose-up (nose above the horizon) maneuvers.
4- only when the indicated airspeed drops to the published stalling speed.



575. Refer to the above illustration. The acute angle "A" is the angle of

021
1- dihedral.
2- attack.
3- camber.
4- incidence.

576. The term "angle-of-attack" is defined as the

021
1- angle between the wing chord line and the direction of the relative wind.
2- angle between the airplane's climb angle and the horizon.
3- angle formed by the longitudinal axis of the airplane and the chord line of the wing.
4- specific angle at which the ratio between lift and drag is the highest.

577. Select the true statement concerning the use of flaps during the approach for a landing.

020
1- The use of flaps increases the airplane's stability.
2- The use of flaps permits a decreased approach angle.
3- By using flaps, a steeper than normal angle of descent is possible without increasing the airspeed.
4- The use of flaps requires a higher indicated airspeed on the final approach.

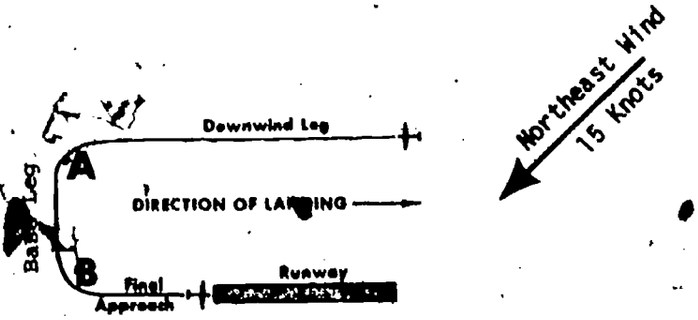
578. To counteract the effect of torque in a conventional single-engine propeller-driven airplane, a pilot would normally add

023
1- left rudder pressure during the takeoff roll and while climbing with full power.
2- right rudder pressure when entering a glide from level cruising flight.
3- right rudder pressure during the takeoff roll and while climbing with full power.
4- left rudder pressure when entering a climb from level cruising flight.

579. The effect of torque would be most noticeable during

023
1- maximum speed in level flight with maximum continuous power.
2- flight at a critically slow airspeed with full throttle.
3- maximum structural cruising speed.
4- gliding flight with a reduced throttle setting.

580. Assume that you are attempting to follow the ground track of the traffic pattern shown below with the wind conditions as indicated.



The amount of turn normally required with the above wind conditions would be

022
1- approximately 70° at position B, if the turn entry was delayed.
2- at least 120° at position B.
3- 90° at position A.
4- more than 90° at position A.

581. Excessively high engine temperatures, either in the air or on the ground, will

P02
1- cause damage to heat-conducting hoses and warping of the cylinder cooling fins.
2- cause loss of power, excessive oil consumption, and possible permanent internal engine damage.
3- not appreciably affect an aircraft engine in either environment.
4- increase fuel consumption and may increase power due to the increased heat.

582. For internal cooling, reciprocating aircraft engines are especially dependent on

P02
1- a properly functioning thermostat.
2- air flowing over the exhaust manifold.
3- the circulation of lubricating oil.
4- a lean fuel/air mixture.

583. What change occurs in the fuel/air mixture when carburetor heat is applied?

P01
1- A decrease in RPM results from the lean mixture.
2- No change occurs in the fuel/air mixture.
3- The fuel/air mixture becomes leaner.
4- The fuel/air mixture becomes richer.

584. In comparison to fuel injection systems, float-type carburetor systems are generally considered to be

P01
1- equally susceptible to icing as a fuel injection unit.
2- susceptible to icing only when visible moisture is present.
3- more susceptible to icing than a fuel injection unit.
4- less susceptible to icing than a fuel injection unit.

585. In comparing a fuel injection system with a float-type carburetor system, the carburetor equipped aircraft engine is generally considered to be

P01
1- less susceptible to icing than a fuel injection unit.
2- susceptible to icing only when visible moisture is present.
3- equally susceptible to icing as a fuel injection unit.
4- more susceptible to icing than a fuel injection unit.

586. Compare carburetor equipped engines with fuel injection equipped engines. Select the true statement concerning these systems.

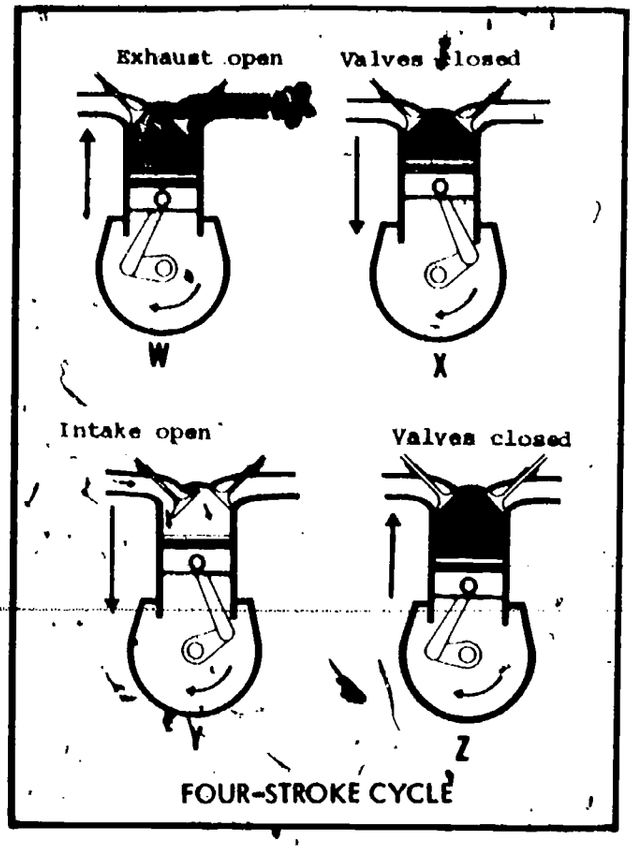
P01
1- The carburetor system provides easier cold weather starts and a more precise control of mixture.
2- The fuel injection system is generally considered to be less susceptible to icing.
3- The carburetor equipped engine provides better fuel distribution and faster throttle response.
4- With a fuel injection system, it is usually less difficult to start a hot engine and there is less chance of a vapor lock.

587. Concerning torque effect on a single-engine propeller-driven airplane, in which of the following airspeed and power conditions would torque effect be the greatest?

023
1- High airspeed; low power.
2- Low airspeed; high power.
3- High airspeed; high power.
4- Low airspeed; low power.

588. Which statement is true relative to trimming a single-engine propeller-driven airplane to compensate for the effects of torque?

023
1- If power is reduced (airspeed constant), right rudder trim must be added.
2- If power is increased (airspeed constant), left rudder trim must be added.
3- If airspeed is decreased (power constant), right rudder trim must be added.
4- If airspeed is increased (power constant), right rudder trim must be added.



589. Refer to the diagram above. Which illustration depicts the power stroke?

P02
1- W.
2- X.
3- Y.
4- Z.

590. Refer to the diagram above. Which illustration depicts the exhaust stroke?

P02
1- X.
2- Y.
3- W.
4- Z.

591. Refer to the diagram above. Illustration "___" depicts the

P02
1- compression stroke.
2- ignition stroke.
3- power stroke.
4- fuel injection stroke.

592. Refer to the illustration above. What is the proper sequence of the four strokes of the piston of a gasoline engine?

P02
1- Y, Z, X, W.
2- W, Y, X, Z.
3- Z, X, Y, W.
4- X, W, Z, Y.

593. Refer to the diagram to the left. Which illustration depicts the compression stroke?

P02
1- X.
2- Y.
3- W.
4- Z.

594. During the runup at a high elevation airport you note a slight engine roughness that is not affected by the magneto check, but grows worse during the carburetor heat check. Under these circumstances, which of the following would be the most logical initial action?

P04
1- Check the results obtained with a leaner setting of the mixture control.
2- Taxi back to the flight line for a maintenance check.
3- Reduce manifold pressure to control detonation.
4- Check to see that the mixture control is in the full rich position.

595. The basic purpose of adjusting the fuel/air mixture control at altitude is to

P04
1- decrease the amount of fuel in the mixture in order to compensate for increased air density.
2- decrease the fuel flow in order to compensate for decreased air density.
3- increase the amount of fuel in the mixture to compensate for the decrease in pressure and density of the air.
4- increase the fuel/air ratio for flying at altitude.

596. Assume that on your runup at an airport where the elevation is 6,000 feet MSL, you note a slight engine roughness that is not significantly affected by the magneto check but grows worse during the carburetor heat check. Under these circumstances, which of the following would be your most logical initial action?

P04
1- Check to see that the mixture control is in the full rich position.
2- Reduce manifold pressure to control detonation.
3- Taxi back to the flight line for a maintenance check.
4- Check the results obtained with a leaner setting of the mixture control.

597. With regard to the use of aviation gasoline, which statement is true?

P05
1- Use of a higher-than-specified grade of fuel usually results in lower-than-normal cylinder head temperatures.
2- Use of the next higher-than-specified grade of fuel is permissible if the specified grade of fuel is not available.
3- Use of the next lower-than-specified grade of fuel is permissible and it is usually not harmful to the engine.
4- Use of a lower-than-specified grade of fuel may result in a reduced power output but is usually less harmful than higher rated fuel.

598. Aircraft engine crankshafts are very susceptible to overstress. A detuning of engine crankshaft counterweights is a source of overstress that may be caused by

P04
1- carburetor ice forming on the throttle valve.
2- rapid opening and closing of the throttle.
3- operating with an excessively rich fuel/air mixture.
4- extended glides with reduced power.

599. Assume that while cruising at 9,500 feet MSL the fuel/air mixture is properly adjusted. If a descent to 4,500 feet MSL is made without readjusting the mixture control

P04
1- the fuel/air mixture may become excessively lean.
2- there will be more fuel in the cylinders than is needed for normal combustion, and the "excess fuel" will absorb heat and cool the engine.
3- the excessively rich mixture will create higher cylinder head temperatures and may cause detonation.
4- the fuel/air mixture may become excessively rich.

600. Concerning the use of the proper grade of aviation gasoline, select the true statement from the following:

P05
1- Use of a higher-than-specified grade usually results in lower-than-normal cylinder head temperatures.
2- Use of the next higher-than-specified grade is permissible if the specified grade is not available.
3- Use of the next lower-than-specified grade is permissible and it is usually not harmful to the engine.
4- Use of a lower-than-specified grade may result in a reduced power output but is usually less harmful than higher grade fuel.

601. Select the true statement regarding the use of the proper grade of gasoline specified for a particular engine.

P05
1- The use of a grade higher than specified improves engine operation because of the higher octane or performance number.
2- Most aircraft engines would be difficult or perhaps impossible to start when a grade lower than specified is used.
3- Using the next lower-than-specified grade fuel is usually more harmful to an aircraft engine than using the next higher-than-specified grade fuel.
4- It is recommended that the next higher grade of automotive gasoline be used when aviation fuel is not available.

602. If the grade of fuel used in an aircraft engine is lower than specified for the engine, it will most likely cause

P05
1- a mixture of fuel and air that is not uniform in all cylinders.
2- lower cylinder head temperatures.
3- an increase in power which could overstress internal engine components.
4- detonation.

603. An abnormally high engine oil temperature indication may be caused by

P10
1- the oil level being too low.
2- a defective bearing.
3- operating with an excessively rich mixture.
4- the oil level being too high.

604. The primary reason for filling the fuel tanks to capacity after the last flight of the day is to reduce the airspace in the tanks so that

P09
1- moisture would not condense and create water in the fuel system.
2- evaporation of leaded fuel would not leave a chemical residue and contaminate the remaining fuel.
3- air or vapor could not enter the fuel lines and cause vapor lock.
4- vaporization of the fuel, or fuel fumes, could not create a fire hazard.

605. Filling the fuel tanks after the last flight of the day is considered a good operating procedure because this will

P09
1- force any existing water to the top of the tank away from the fuel lines to the engine.
2- prevent expansion of the fuel by eliminating airspace in the tanks.
3- prevent moisture condensation by eliminating airspace in the tanks.
4- eliminate vaporization of the fuel.

606. Detonation occurs in a reciprocating aircraft engine when

P08
1- the spark plugs are "fouled" or "shorted out" or the wiring is defective.
2- hot spots in the combustion chamber ignite the fuel/air mixture in advance of normal ignition.
3- there is too rich a fuel/air mixture.
4- the unburned charge in the cylinders explodes instead of burning normally.

607. If you suspect that the engine (with a fixed-pitch propeller) is detonating during climb-out after takeoff, normally the corrective action to take would be to

P08
1- increase the rate of climb.
2- retard the throttle.
3- lean the mixture.
4- apply carburetor heat.

608. Concerning detonation in an aircraft engine, select the true statement from the following:

P08
1- Detonation may be caused by opening the throttle abruptly when the engine is running at slow speeds.
2- Detonation is most likely to occur immediately after starting a cold engine.
3- Detonation is usually caused by too rich a mixture.
4- Detonation can easily be detected by a "pinging" sound.

609. The practice of running a fuel tank dry before switching tanks is considered unwise because

P06
1- the engine-driven fuel pump or electric fuel boost pump may draw air into the fuel system and cause vapor lock.
2- the engine-driven fuel pump is lubricated by fuel and operating on a dry tank may cause pump failure.
3- any foreign matter in the tank will be pumped into the fuel system.
4- the fuel pump is located above the bottom portion of the fuel tank.

610. Which statement is true regarding aircraft engines that are equipped with a fuel injection system instead of a carburetor?

P06
1- Slow throttle response is one of the disadvantages of fuel injection.
2- Fuel injection provides better fuel flow and fuel distribution to the engine.
3- A disadvantage of fuel injection is the difficulty experienced in cold weather starting.
4- Vapor locks during ground operations on hot days are less apt to occur with fuel injection.

611. Suppose that electrical system failure (battery and alternator) occurs during flight. In this situation, you would

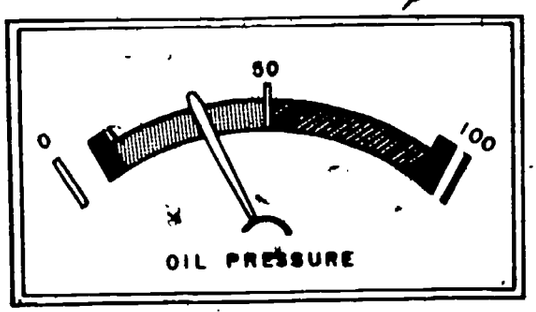
P10
1- probably experience failure of the engine ignition system, fuel gauges, aircraft lighting system, and avionics equipment.

2- probably experience engine failure due to the loss of the engine-driven fuel pump and also experience failure of the radio equipment, lights, and all instruments that require AC current.

3- experience avionics equipment failure.

4- experience high cylinder head temperature and low oil pressure indications.

612. Suppose the engine oil temperature is normal, but the oil pressure has dropped below the normal operating range as indicated below.



LEGEND

▒ = YELLOW ■ = RED

■ = GREEN

If the engine is running smoothly, the best procedure to follow would be to

P10
1- check the circuit breakers to determine if you have lost electrical power, and enrich the mixture to lessen the chances of detonation.

2- continue to the nearest airport and land.

3- make a precautionary landing on the nearest stretch of straight highway.

4- declare an emergency on the frequency 121.5 MHz.

613. Select the true statement concerning carburetor icing.

P11
1- Carburetor icing would most likely form when the air temperature is between 20° F. (-7° C) and 70° F. (19° C.) with visible moisture or high humidity.

2- The carburetor heater is a deicing device that heats the air after it enters the carburetor.

3- The first indication of carburetor icing in an airplane equipped with a fixed-pitch propeller is an increase in RPM, followed by a decrease in RPM.

4- Carburetor icing will always form in a carburetor whenever the temperature is below freezing 32° F. (0° C.).

614. If an airplane is equipped with a fixed-pitch propeller and a float-type carburetor the first indication of carburetor ice would most likely be

P11
1- a drop in oil temperature and cylinder head temperature.

2- engine roughness.

3- drop in manifold pressure.

4- loss of RPM.

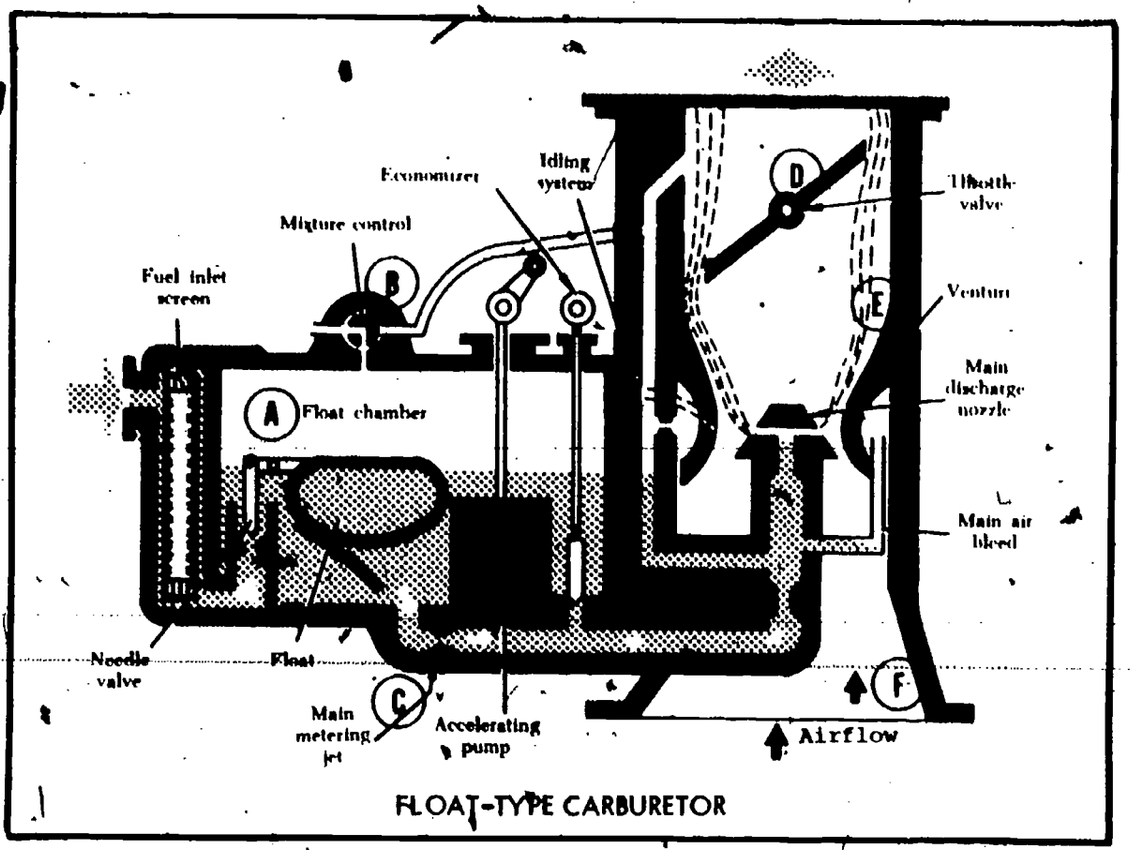
615. The presence of carburetor ice, in an airplane equipped with a fixed-pitch propeller can be verified by applying carburetor heat and noting

P11
1- an increase in RPM and then a gradual decrease in RPM.

2- a decrease in RPM and then a constant RPM indication.

3- an immediate increase in RPM with no further change in RPM.

4- a decrease in RPM and then a gradual increase in RPM.



FLOAT-TYPE CARBURETOR

616. Refer to the illustration above. Carburetor icing would most likely occur in which of the following areas?

P11
1- Mixture control.
2- Accelerating pump.
3- Main air bleed.
4- Venturi.

617. Refer to the illustration above. Carburetor icing would most likely occur in areas

P11
1- A and B.
2- C and F.
3- B and D.
4- D and E.

618. Refer to the illustration above. During low or closed throttle settings, carburetor ice would be most likely to form in the vicinity of area

P11
1- B.
2- C.
3- A.
4- D.

619. Refer to the illustration above and select the true statement concerning carburetor icing.

P11
1- Ice seldom adheres to the throttle valve (D).
2- Icing would most likely occur simultaneously at the needle valve and in the float chamber (A).
3- The throttle valve (D) area is especially susceptible to the formation of carburetor ice.
4- Impact ice is most likely to form at the main metering jet (C).

620. During low or closed throttle settings, an engine is particularly susceptible to carburetor icing. Refer to the illustration above. Formation of carburetor ice would be most likely to accumulate in the

P11
1- main metering jet.
2- economizer.
3- float chamber.
4- area of the throttle valve.

621. If the engine oil temperature and cylinder head temperature gauges have exceeded their normal operating range, you may have been

P15
1- operating with the mixture set too rich.
2- operating with higher-than-normal oil pressure.
3- using fuel that has a higher-than-specified fuel rating.
4- operating with too much power and with the mixture set too lean.

622. Wake turbulence behind a jet airliner is generated just after takeoff, because

P12
1- the airliner's gear and flaps are extended.
2- the acceleration to higher speeds amplifies the turbulence.
3- the jet engines are at maximum thrust at slow airspeeds.
4- lift is being produced by the wings of a heavy aircraft.

623. When you are taking off or landing at a busy airport where large heavy aircraft are operating, you should be particularly alert to the hazards of wingtip vortices because this turbulence tends to

P12
1- rise from a crossing runway into your takeoff or landing path.
2- rise into the traffic pattern area surrounding the airport.
3- sink into the flightpath of aircraft operating below the aircraft generating the turbulence.
4- accumulate at the beginning of the takeoff roll.

624. Consider the hazards of wake turbulence. The wingtip vortices trailing behind large airplanes in flight

P12
1- will present no hazard when the vortices are encountered in level cruising flight.
2- are least severe when the large airplane is at low speed during climb after takeoff and approach for landing.
3- will increase in intensity and violence as the speed of the large airplane increases.
4- are most pronounced when the large airplane is at low speed during climbs or approaches for landings.

625. When avoiding hazardous wingtip vortices which trail behind large heavy airplanes, you should remember that vortices

P12
1- move to the right and left of the airplane's flightpath due to the rotation of the propeller(s) or jet wash.
2- will dissipate within 2 minutes after passage of the large airplane.
3- are encountered above the airplane's flightpath.
4- sink below the airplane's flightpath.

626. Wingtip vortices, the dangerous turbulence that might be encountered behind a large aircraft, are created only when that aircraft is

P12
1- operating at high airspeeds.
2- heavily loaded.
3- developing lift.
4- using high power settings.

627. Wingtip vortices created by large aircraft tend to

P12
1- sink below the aircraft generating the turbulence.
2- rise into the traffic pattern.
3- rise into the takeoff or landing path of a crossing runway.
4- accumulate at the beginning of the takeoff roll.

628. Suppose you are crossing the flightpath of a large jet airplane that is ahead of you at the same altitude. To avoid wake turbulence you should

P12
1- descend and adjust speed to maneuvering speed.
2- fly above the jet's flightpath.
3- descend below the jet's flightpath.
4- descend and fly parallel to the jet's flightpath.

629. As you approach a busy airport, you notice a large jet climbing to altitude after takeoff. Wingtip vortices, the dangerous turbulence that might be encountered behind this large aircraft, are created only when that aircraft is

P12
1- operating at high airspeeds.
2- heavily loaded.
3- developing lift.
4- using high power settings.

630. Concerning the advantages of a generator or an alternator in an airplane's electrical system, select the true statement.

P16
1- A generator charges the battery during low engine RPM and therefore the battery has less chance to become fully discharged, as often occurs with an alternator.
2- An alternator provides more electrical power output at lower engine RPM than a generator.
3- A generator always provides more electrical current than an alternator.
4- An alternator provides electrical current and eliminates the need for an aircraft to be equipped with a battery.

631. What is the result of permitting an airplane engine to idle for a long period of time while on the ground?

P16
1- A hydraulic lock may develop in one or more cylinders.
2- It may cause excessively high oil pressure.
3- The lean mixture may cause the engine to miss or quit.
4- The spark plugs may become fouled.

632. If an airplane engine continues to run after the ignition switch is turned to the "OFF" position, the probable cause may be

P16
1- the mixture is too lean and this causes the engine to diesel.
2- the voltage regulator points are sticking closed.
3- a broken magneto ground wire.
4- fouled spark plugs.

633. Suppose the cylinder head temperature and engine oil temperature gauges have exceeded their normal operating range during flight. One possible cause of this may be

P15
1- operating with higher-than-normal oil pressure.
2- climbing too steeply, particularly in hot weather.
3- using fuel that has a higher-than-specified fuel rating.
4- operating with an excessively rich mixture.

634. Which of the following would most likely cause the cylinder head temperature and engine oil temperature gauges to exceed their normal operating range?

P15
1- Using fuel that has a lower-than-specified fuel rating.
2- Using fuel that has a higher-than-specified fuel rating.
3- Operating with higher-than-normal oil pressure.
4- Operating with the mixture control set too rich.

635. During flight, suppose the engine oil temperature and cylinder head temperature gauges have exceeded their normal operating range. Select from the list below those conditions which might cause this problem.

A. Operating with too much power.
B. Using fuel that has a higher-than-specified fuel rating.
C. Operating with higher-than-normal oil pressure.
D. Climbing too steeply in hot weather.
E. Using fuel that has a lower-than-specified fuel rating.
F. Mixture control set too rich.

The possible causes of this problem are:

P15
1- A, D, E.
2- B, C, D, F.
3- A, B, C, D.
4- C, E, F.

636. Which one of these statements is true regarding the use of supplemental oxygen at high altitudes?

P22
1- Passengers are required to use supplemental oxygen any time the cabin pressure altitude is above 12,500 feet MSL.

2- Any time the aircraft is operated at cabin pressure altitudes of 12,500 feet MSL and above, all persons aboard are required to use supplemental oxygen.

3- The aircraft may be operated at cabin pressure altitudes above 12,500 feet MSL up to and including 14,000 feet MSL without any person aboard using supplemental oyxgen, provided the flight at those altitudes is no longer than 30 minutes' duration.

4- Each occupant must use supplemental oxygen any time the aircraft is operated at cabin pressure altitudes of 10,000 feet MSL and above.

637. The red line on an airspeed indicator means a maximum airspeed that

P19
1- may be exceeded only if gear and flaps are retracted.

2- may be exceeded if abrupt maneuvers are not attempted.

3- may be exceeded only in smooth air.

4- should not be exceeded.

638. Applying carburetor heat will

P18
1- result in more air going through the carburetor.

2- not affect the mixture.

3- enrich the fuel/air mixture.

4- lean the fuel/air mixture.

639. What change occurs in the fuel/air mixture when carburetor heat is applied?

P18
1- A decrease in RPM results from the lean mixture.

2- No change occurs in the fuel/air mixture.

3- The fuel/air mixture becomes leaner.

4- The fuel/air mixture becomes richer.

640. Which statement is true regarding fouling of the spark plugs of an aircraft engine?

P16
1- Excessive heat in the combustion chamber of a cylinder causes oil to form on the center electrode of a spark plug and this fouls the plug.

2- Spark plug fouling results from operating with an excessively rich mixture.

3- Permitting the engine to idle for a long period of time on the ground is the best way to clear fouled spark plugs.

4- Carbon fouling of the spark plugs is caused primarily by operating an engine at excessively high cylinder head temperatures.

TAKE-OFF DATA

TAKE-OFF DISTANCE FROM HARD SURFACE RUNWAY WITH FLAPS UP

GROSS WEIGHT POUNDS	IAS AT 50 MPH	HEAD WIND KNOTS	AT SEA LEVEL & 59°		AT 2,500 FT. & 50°		AT 5,000 FT. & 41°		AT 7,500 FT. & 32°	
			GROUND RUN	TOTAL TO CLEAR 50 FT OBS	GROUND RUN	TOTAL TO CLEAR 50 FT OBS	GROUND RUN	TOTAL TO CLEAR 50 FT OBS	GROUND RUN	TOTAL TO CLEAR 50 FT OBS
2300	68	0	805	1525	1040	1970	1345	2580	1745	3365
		10	615	1150	790	1485	1020	1945	1320	2510
		20	405	850	520	1100	670	1440	870	2325
2000		0	610	1095	785	1425	1015	1870	1320	2455
		10	435	820	560	1065	725	1390	940	1795
		20	255	580	330	720	425	910	595	1255
1700	58	0	415	760	530	970	685	1260	890	1650
		10	290	570	375	680	480	870	625	1040
		20	175	385	215	470	270	575	345	745

NOTES: 1. Increase distance 10% for each 25°F above standard temperature for particular altitude.
2 For operation on a dry, grass runway, increase distances (both "ground run" and "total to clear 50 ft. obstacle") by 7% of the "total to clear 50 ft. obstacle" figure.

641. Existing situation:

Gross weight . . . . . 1,700 lbs.
Outside temperature . . 66° F.
Pressure altitude . . . 5,000 feet
Wind (Headwind) . . . . 20 knots

The TOTAL TAKEOFF DISTANCE required to clear a 50-foot obstacle is

Q01
1- 575 feet.
2- 633 feet.
3- 518 feet.
4- 930 feet.

NOTE: Use chart above.

642. Given data:

Gross weight . . . . . 2,000 lbs.
Pressure altitude . . . 2,500 feet
Outside temperature . . 100° F.
Wind (Headwind) . . . . 10 knots

Applying the given data to the chart above, the total takeoff distance required to clear a 50-foot obstacle is

Q01
1- 1,005 feet.
2- 804 feet.
3- 1,206 feet.
4- 1,842 feet.

643. Given situation:

Gross weight . . . . . 2,300 lbs.
Pressure altitude . . . Sea level
Outside temperature . . 84° F.
Wind . . . . . Calm

Using this data and the chart above, how much TOTAL TAKEOFF DISTANCE is required to clear a 50-foot obstacle?

Q01
1- 1,373 feet.
2- 952 feet.
3- 1,525 feet.
4- 1,678 feet.

644. Refer to the chart above:

Pressure altitude . . . 5,000 feet
Gross weight . . . . . 1,700 lbs.
Outside temperature . . 91° F.
Wind (Headwind) . . . . 10 knots

The TOTAL TAKEOFF DISTANCE required to clear a 50-foot obstacle is

Q01
1- 1,000 feet.
2- 1,250 feet.
3- 984 feet.
4- 1,500 feet.

645. GIVEN:

Gross weight . . . . . 2,000 lbs.
Pressure altitude . . . 2,500 feet
Wind (Headwind) . . . . 20 knots
Outside temperature . . 75° F.

How much TOTAL TAKEOFF DISTANCE is required to clear a 50-foot obstacle?

Q01
1- 792 feet.
2- 1,060 feet.
3- 720 feet.
4- 1,166 feet.

NOTE: Use chart above.

646. Assume these conditions exist:

Gross weight . . . . . 2,300 lbs.
Outside temperature . . 109° F.
Pressure altitude . . . Sea level
Wind (Headwind) . . . . 10 knots

According to the chart above, the TOTAL TAKEOFF DISTANCE required to clear a 50-foot obstacle is

Q01
1- 1,170 feet.
2- 1,404 feet.
3- 926 feet.
4- 2,042 feet.

647. GIVEN:

Pressure altitude . . . 5,000 feet
Outside temperature . . 41° F.
Gross weight . . . . . 2,000 lbs.
Headwind . . . . . 15 knots

Based on the conditions given and using the chart on the previous page, what would be the total distance required to take off and clear a 50-foot obstacle?

Q01
1- 815 feet.
2- 910 feet.
3- 1,080 feet.
4- 1,250 feet.

648. GIVEN:

Pressure altitude . . . 2,500 feet
Outside temperature . . 75° F.
Gross weight . . . . . 1,700 lbs.
Headwind . . . . . 10 knots

Based on these conditions and using the chart on the previous page, what would be the total distance required to take off and clear a 50-foot obstacle?

Q01
1- 470 feet.
2- 538 feet.
3- 748 feet.
4- 680 feet.

649. GIVEN:

Pressure altitude . . . 2,500 feet
Outside temperature . . 75° F.
Gross weight . . . . . 2,300 lbs.
Headwind . . . . . 15 knots

Based on these conditions and using the chart on the previous page, what would be the total distance required to take off and clear a 50-foot obstacle?

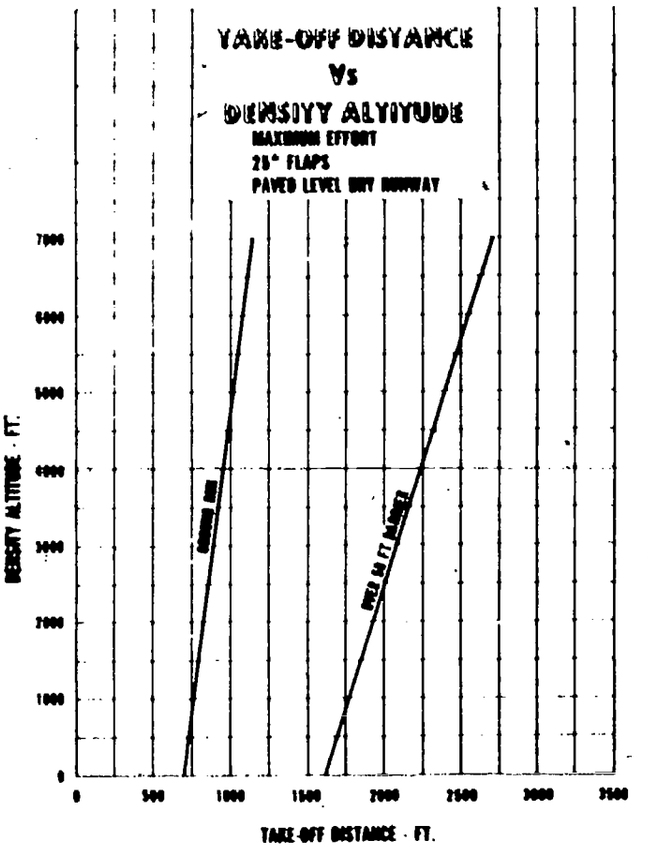
Q01
1- 1,292 feet.
2- 1,422 feet.
3- 1,485 feet.
4- 665 feet.

650. GIVEN:

Pressure altitude . . . Sea level
Outside temperature . . 84° F.
Gross weight . . . . . 1,700 lbs.
Headwind . . . . . 20 knots

Based on these conditions and the chart on the previous page, what would be the total distance required to take off and clear a 50-foot obstacle?

Q01
1- 385 feet.
2- 424 feet.
3- 329 feet.
4- 531 feet.



651. Refer to the chart above. The density altitude is 4,000 feet at the airport of departure. The takeoff distance required to clear a 50-foot obstacle would be

Q01
1- 2,500 feet.
2- 2,250 feet.
3- 2,800 feet.
4- 2,950 feet.

652. Suppose the density altitude is 2,750 feet. According to the chart above, what takeoff distance would be required to clear a 50-foot obstacle?

Q01
1- 1,525 feet.
2- 2,075 feet.
3- 1,600 feet.
4- 2,500 feet.

653. According to the chart above, the ground run distance required to take off at an airport that has a density altitude of 2,750 feet would be

Q01
1- 1,000 feet.
2- 875 feet.
3- 750 feet.
4- 500 feet.

MAXIMUM RATE-OF-CLIMB DATA

GROSS WEIGHT POUNDS	AT SEA LEVEL & 59°F			AT 5000 FT & 41°F			AT 10 000 FT & 23°F			AT 15 000 FT & 5°F		
	IAS MPH	RATE OF CLIMB FT MIN	FROM S L FUEL USED	IAS MPH	RATE OF CLIMB FT MIN	FROM S L FUEL USED	IAS MPH	RATE OF CLIMB FT MIN	FROM S L FUEL USED	IAS MPH	RATE OF CLIMB FT MIN	FROM S L FUEL USED
2100	82	645	1 0	81	405	2 6	79	210	4 8	78	22	11 5
2000	79	840	1 0	79	610	2 2	76	388	3 6	75	1 ..	6 1
1700	77	1085	1 0	76	825	1 9	73	620	2 9	72	115	4 3

NOTES 1. Flaps up full throttle mixture leaned for smooth operation above 3000 ft
2. Fuel used includes warm up and take off allowance
3. For hot weather decrease rate of climb 20 ft min for each 10°F above standard day temperature for particular altitude

654. Refer to the above chart and apply the following data:

Pressure altitude . . . 5,000 feet
Temperature . . . . . 71° F.
Gross weight . . . . . 2,300 lbs.
Indicated airspeed . . 81 MPH

Assume you have climbed at a constant rate for 4 minutes. What would be the approximate gain in altitude?

Q02
1- 1,680 feet.
2- 1,500 feet.
3- 2,200 feet.
4- 2,340 feet.

655. Assume the following conditions exist:

Pressure altitude . . . Sea level
Temperature . . . . . 89° F.
Gross weight . . . . . 2,000 lbs.
Indicated airspeed . . 79 MPH

Apply these conditions to the above chart to obtain the altimeter indication after a 5-minute climb following takeoff. The altimeter would indicate approximately

Q02
1- 4,100 feet.
2- 4,000 feet.
3- 3,900 feet.
4- 4,260 feet.

656. Apply the following conditions to the above chart:

Pressure altitude . . . 5,000 feet
Temperature . . . . . 61° F.
Gross weight . . . . . 2,000 lbs.
Indicated airspeed . . 79 MPH

Assume you have climbed at a constant rate for 3 minutes. What would be the approximate gain in altitude?

Q02
1- 1,810 feet.
2- 1,790 feet.
3- 1,710 feet.
4- 1,830 feet.

657. Refer to the above chart and apply the following data:

Pressure altitude . . . Sea level
Temperature . . . . . 79° F.
Gross weight . . . . . 1,700 lbs.
Indicated airspeed . . 77 MPH

If after takeoff a climb was made for a period of 2 minutes 30 seconds, what would be the approximate indicated altitude?

Q02
1- 2,613 feet.
2- 2,672 feet.
3- 2,170 feet.
4- 2,753 feet.

658. Use the following data and the above chart to obtain the approximate gain in altitude after a 4-minute climb:

Pressure altitude . . . Sea level
Temperature . . . . . 69° F.
Gross weight . . . . . 2,300 lbs
Indicated airspeed . . 82 MPH

The gain in altitude would be

Q02
1- 2,570 feet.
2- 2,600 feet.
3- 2,500 feet.
4- 2,560 feet.

659. GIVEN:

Pressure altitude . . . 5,000 feet
Temperature . . . . . 51° F.
Gross weight . . . . . 2,000 lbs.
Indicated airspeed . . . 79 MPH

Based on conditions given and the above chart, how much altitude would you expect to gain after takeoff and climb for 3 minutes?

Q02
1- 1,770 feet.
2- 1,850 feet.
3- 1,810 feet.
4- 1,830 feet.

CRUISE PERFORMANCE

ALT.	RPM	%BHP	TAS MPH	Endurance on 38.8 Gal (HR)	Range on 38.8 Gal (MI)	Endurance on 58.8 Gal (HR)	Range on 58.8 Gal (MI)
2500	2550	75	136	2.9	400	4.8	650
	2425	65	126	3.5	445	5.8	740
	2325	55	118	4.2	495	7.1	835
3500	2575	75	137	2.9	405	4.8	655
	2450	65	127	3.5	450	5.8	745
	2350	55	119	4.2	495	7.1	840
4500	2600	75	139	2.9	410	4.8	665
	2475	65	128	3.5	450	5.8	750
	2375	55	119	4.2	495	7.1	845
5500	2625	75	140	2.9	410	4.8	670
	2500	65	129	3.5	455	5.8	755
	2400	55	120	4.2	495	7.1	845
6500	2650	75	142	2.9	415	4.8	675
	2550	65	130	3.5	455	5.8	760
	2450	55	120	4.2	500	7.1	850
7500	2675	75	143	2.9	420	4.8	685
	2575	65	131	3.5	460	5.8	765
	2450	55	121	4.1	500	7.1	855
8500	2650	70	138	3.2	440	5.3	730
	2600	65	132	3.5	460	5.8	770
	2475	55	122	4.1	500	7.0	855
9500	2625	65	134	3.5	465	5.8	775
	2550	60	128	3.8	480	6.3	815
	2500	55	122	4.1	500	7.0	860
10500	2650	65	135	3.5	465	5.8	780
	2575	60	129	3.8	485	6.3	820
	2525	55	123	4.1	505	7.0	860

DO NOT MARK ON CHART

660. GIVEN:

Altitude . . . . . 5,500 feet
RPM 2625
BHP 75%

Based on the chart above, what would be the approximate range with 38.8 gallons of usable fuel?

Q03
1- 410 miles.
2- 455 miles.
3- 543 miles.
4- 670 miles.

661. With the conditions shown on the chart above, you determine the endurance for 58.8 gallons of usable fuel at an altitude of 2,500 feet using 65% power would be

Q03
1- 4.8 hours.
2- 5.8 hours.
3- 5.0 hours.
4- 3.5 hours.

662. Refer to the chart above. What would be the approximate range at an altitude of 4,500 feet using 55% BHP with 38.8 gallons of usable fuel?

Q03
1- 495 miles.
2- 630 miles.
3- 450 miles.
4- 845 miles.

663. You plan to cruise at 8,500 feet, using 65% BHP and 2600 RPM. Refer to the chart above. What would be the range with 58.8 gallons of usable fuel?

Q03
1- 460 miles.
2- 685 miles.
3- 770 miles.
4- 855 miles.

CRUISE & RANGE PERFORMANCE

Gross Weight 2300 Lbs.
Standard Conditions
Zero Wind Lean Mixture

NOTE: Maximum cruise is normally limited to 75% power

ALT	RPM	% BHP	TAS MPH	GAL / HOUR	38 GAL (NO RESERVE) ENDR HOURS	38 GAL (NO RESERVE) RANGE MILES	48 GAL (NO RESERVE) ENDR HOURS	48 GAL (NO RESERVE) RANGE MILES
2500	2700	86	134	9.7	3.9	525	4.9	660
	2600	79	129	8.6	4.4	570	5.6	730
	2500	72	123	7.8	4.9	600	6.2	760
	2400	65	117	7.2	5.3	620	6.7	780
	2300	58	111	6.7	5.7	630	7.2	795
	2200	52	103	6.3	6.1	625	7.7	790
5000	2700	82	134	9.0	4.2	565	5.3	710
	2600	75	128	8.1	4.7	600	5.9	760
	2500	68	122	7.4	5.1	625	6.4	790
	2400	61	116	6.9	5.5	635	6.9	805
	2300	55	108	6.5	5.9	635	7.4	805
	2200	49	100	6.0	6.3	630	7.9	795
7500	2700	78	133	8.4	4.5	600	5.7	755
	2600	71	127	7.7	4.9	625	6.2	790
	2500	64	121	7.1	5.3	645	6.7	810
	2400	58	113	6.7	5.7	645	7.2	820
	2300	52	105	6.2	6.1	640	7.7	810
10,000	2650	70	129	7.6	5.0	640	6.3	810
	2600	67	125	7.3	5.2	650	6.5	820
	2500	61	118	6.9	5.5	655	7.0	830
	2400	55	110	6.4	5.9	650	7.5	825
	2300	49	100	6.0	6.3	635	8.0	800

664. Refer to the above chart. If the cruise altitude is 7,500 feet, using 58% power at 2400 RPM, what would be the range with 48 gallons of usable fuel?

Q03
1- 635 miles.
2- 810 miles.
3- 645 miles.
4- 820 miles.

665. With the conditions shown on the chart above, what would be the approximate true airspeed and fuel consumption per hour at an altitude of 7,500 feet, using 52% power?

Q03
1- 105 MPH TAS, 6.2 gals./hour.
2- 100 MPH TAS, 7.4 gals./hour.
3- 118 MPH TAS, 6.9 gals./hour.
4- 113 MPH TAS, 6.7 gals./hour.

666. Refer to the above chart. You plan to cruise at 5,000 feet, using 75% BHP and 2600 RPM. How long could the airplane be flown with 48 gallons of usable fuel aboard?

Q03
1- 5.3 hours.
2- 6.4 hours.
3- 5.9 hours.
4- 4.7 hours.

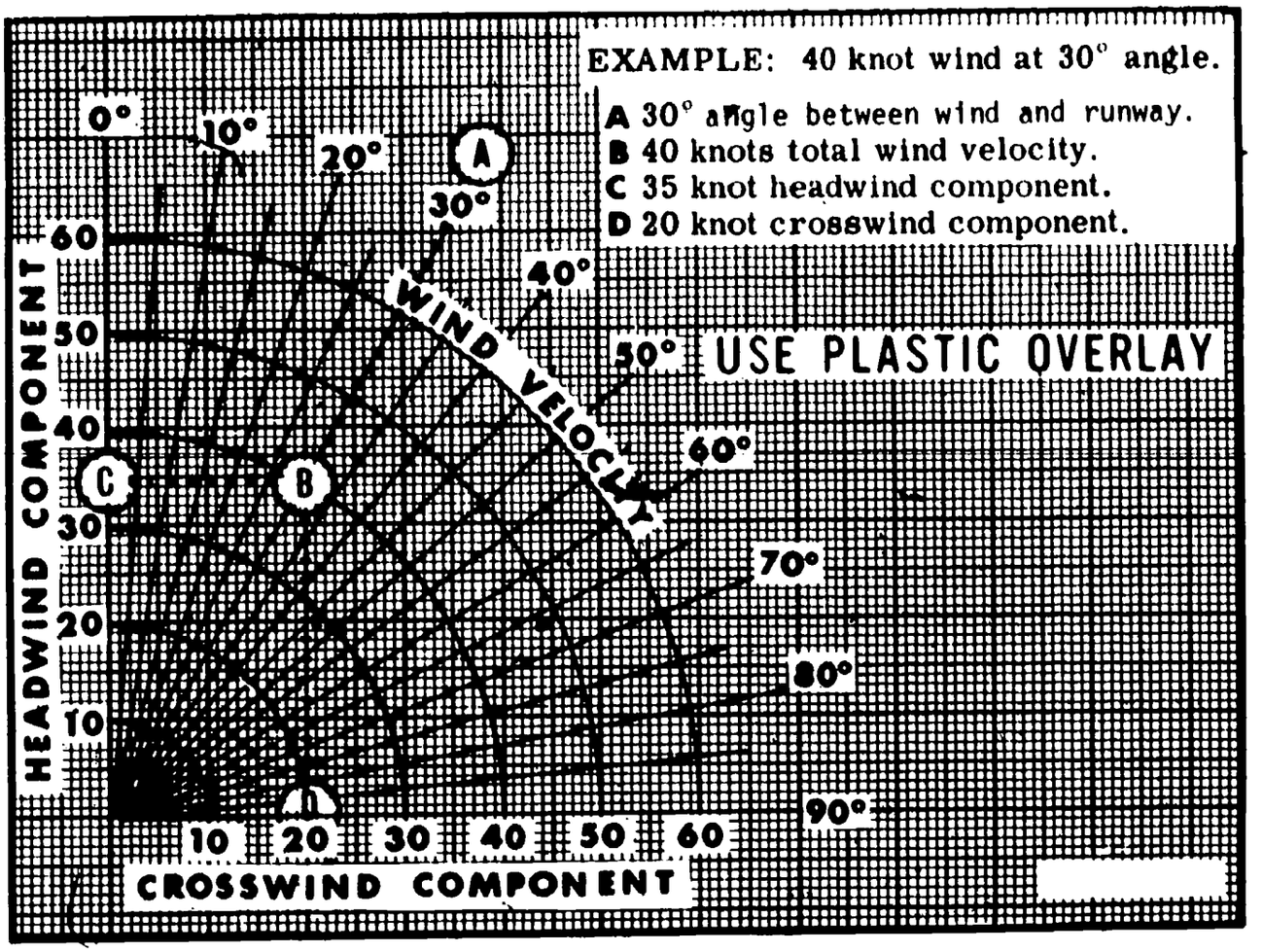
667. With the conditions shown on the above chart, what would be the flight hours' endurance at an altitude of 2,500 feet, using 58% power?

Q03
1- 5.7 hours.
2- 6.0 hours.
3- 5.3 hours.
4- 7.2 hours.

NOTE: With 38 gals. fuel - no reserve.

668. The maximum crosswind component of your airplane is 18 knots. The tower is reporting the surface wind from 310° at 35 knots and you plan to land on Runway 35. Using this data and the chart on the opposite page, select the true statement.

Q04
1- A right quartering headwind will be encountered on the landing.
2- The crosswind component will be 17 knots.
3- The crosswind component will exceed the headwind component.
4- The maximum crosswind component will be exceeded.



669. GIVEN:

Max. crosswind component for your airplane . . . . 15 knots.
Landing runway 17
Wind from 210° at . . . . . 20 knots

Which of the following statements is true? (Use chart above.)

Q04
1- The maximum crosswind component is not exceeded.
2- A left quartering headwind exists.
3- The maximum crosswind component is exceeded.
4- The crosswind component exceeds the headwind component.

67Q. GIVEN:

Landing runway . . . 29
Wind . . . . . 240° @ 25 knots

What is the crosswind component? (Use chart above.)

Q04
1- 21 knots.
2- 25 knots.
3- 19 knots.
4- 30 knots.

671. The wind is reported to be from 85° at 30 knots and you plan to land on Runway 11. What will be the crosswind component? (Use chart above.)

Q04
1- 16 knots.
2- 25 knots.
3- 13 knots.
4- 30 knots.

672. GIVEN:

Landing runway . . . 26
Wind . . . . . 290° @ 20 knots

The crosswind component is

Q04
1- 10 knots.
2- 12 knots.
3- 7 knots.
4- 17 knots.

NOTE: Use chart above.

673. The wind is reported to be from 360° at 15 knots and you plan to land on Runway 4. What will be the crosswind component? (Use chart above.)

Q04
1- 15 knots.
2- 18 knots.
3- 10 knots.
4- 25 knots.

NORMAL LANDING DISTANCES

ASSOCIATED CONDITIONS

POWER	OFF
FLAPS	35
GEAR	DOWN
RUNWAY	PAVED, LEVEL, DRY SURFACE
WEIGHT	2750 POUNDS
APPROACH SPEED	86 MPH/74 KTS IAS

NOTES

1. GROUND ROLL IS APPROXIMATELY 45% OF TOTAL DISTANCE OVER 50 FT OBSTACLE
2. FOR EACH 100 LBS BELOW 2750 LBS REDUCE TABULATED DISTANCE BY 3% AND APPROACH SPEED BY 1 MPH

WIND COMPONENT DOWN RUNWAY ◆ KNOTS	SEA LEVEL		2000 FT		4000 FT		6000 FT		8000 FT	
	OAT °F	TOTAL OVER 50 FT OBSTACLE FEET	OAT °F	TOTAL OVER 50 FT OBSTACLE FEET	OAT °F	TOTAL OVER 50 FT OBSTACLE FEET	OAT °F	TOTAL OVER 50 FT OBSTACLE FEET	OAT °F	TOTAL OVER 50 FT OBSTACLE FEET
[redacted]	23	1578	16	1651	9	1732	2	1820	-6	1916
	41	1624	34	1701	27	1787	20	1880	13	1983
	59	1670	52	1762	46	1842	38	1942	31	2060
	77	1717	70	1804	63	1899	56	2004	49	2118
	95	1764	88	1856	81	1966	74	2066	66	2187
15	23	1329	16	1397	9	1472	2	1555	-6	1644
	41	1372	34	1444	27	1524	20	1611	13	1707
	59	1414	52	1491	46	1576	38	1668	31	1770
	77	1458	70	1540	63	1626	56	1727	49	1833
	95	1507	88	1588	81	1687	74	1784	66	1898
30	23	1079	16	1142	9	1212	2	1289	-6	1372
	41	1119	34	1186	27	1260	20	1341	13	1430
	59	1158	52	1230	46	1308	38	1396	31	1489
	77	1199	70	1275	63	1357	56	1449	49	1548
	95	1240	88	1320	81	1407	74	1502	66	1608

674. Assume these conditions exist:

Gross weight . . . . . 2,750 lbs.
Outside air temperature . 52° F.
Pressure altitude . . . . 2,000 feet
Wind (down runway) . . . . 8 knots

Based on these conditions and the chart above, the total landing distance over a 50-foot obstacle would be

Q06
1- 1,560 feet.
2- 1,622 feet.
3- 1,397 feet.
4- 1,856 feet.

675. Given Data:

Gross weight . . . . . 2,750 lbs.
Outside air temperature . 74° F.
Pressure altitude . . . . 6,000 feet
Wind (down runway) . . . . 15 knots

Using the given data and the chart above, the approximate ground roll would be

Q06
1- 981 feet.
2- 1,761 feet.
3- 803 feet.
4- 1,784 feet.

676. Refer to the chart above and apply the following data:

Gross weight . . . . . 2,750 lbs.
Outside air temperature . 36° F.
Pressure altitude . . . . 4,000 feet
Wind . . . . . Calm

The total landing distance over a 50-foot obstacle would be

Q06
1- 1,842 feet.
2- 1,815 feet.
3- 1,797 feet.
4- 1,787 feet.

677. Apply the following conditions to the chart above:

Gross weight . . . . . 2,750 lbs.
Outside air temperature . 60° F.
Pressure altitude . . . . 5,000 feet
Wind (down runway) . . . . 30 knots

The total landing distance over a 50-foot obstacle would be

Q06
1- 1,449 feet.
2- 1,413 feet.
3- 1,403 feet.
4- 1,357 feet.

678. If you plan to land at an airport where the elevation is 7,500 feet, the indicated approach airspeed should be

Q13
1- higher than that used for a sea level airport, and some power should be used until touchdown.
2- the same as that used at a sea level airport.
3- lower than that used at a sea level airport.
4- higher than that used at a sea level airport.

679. Which of the following combinations of atmospheric conditions will have the most adverse effect on airplane takeoff and climb performance?

Q13
1- Low temperature and high relative humidity.
2- High temperature and high relative humidity.
3- High temperature and low relative humidity.
4- Low temperature and low relative humidity.

680. Which factor would tend to increase the DENSITY ALTITUDE at a given airport?

Q13
1- Increasing barometric pressure.
2- Increasing ambient temperature.
3- Decreasing relative humidity.
4- Decreasing ambient temperature.

681. Which combination of atmospheric conditions will reduce airplane takeoff and climb performance?

Q13
1- Low temperature, low relative humidity, and low density altitude.
2- High temperature, low relative humidity, and low density altitude.
3- High temperature, high relative humidity, and high density altitude.
4- Low temperature, high relative humidity, and high density altitude.

682. Which of these factors would tend to decrease the DENSITY ALTITUDE at a given airport?

Q13
1- Increasing ambient temperature.
2- Decreasing barometric pressure.
3- Increasing relative humidity.
4- Decreasing relative humidity.

683. DENSITY ALTITUDE would increase at a given airport under which of the following conditions?

Q13
1- Decreasing barometric pressure.
2- Decreasing relative humidity.
3- Decreasing ambient temperature.
4- Increasing barometric pressure.

684. Of the factors listed, which would tend to decrease the DENSITY ALTITUDE at a given airport?

Q13
1- Decreasing barometric pressure.
2- Increasing relative humidity.
3- Increasing ambient temperature.
4- Increasing barometric pressure.

685. Which of the following combinations of atmospheric conditions will reduce airplane takeoff performance?

Q13
1- High altitude, high humidity, and low temperature.
2- Low altitude, low temperature, and low humidity.
3- High altitude, high temperature, and high humidity.
4- High altitude, low temperature, and low humidity.

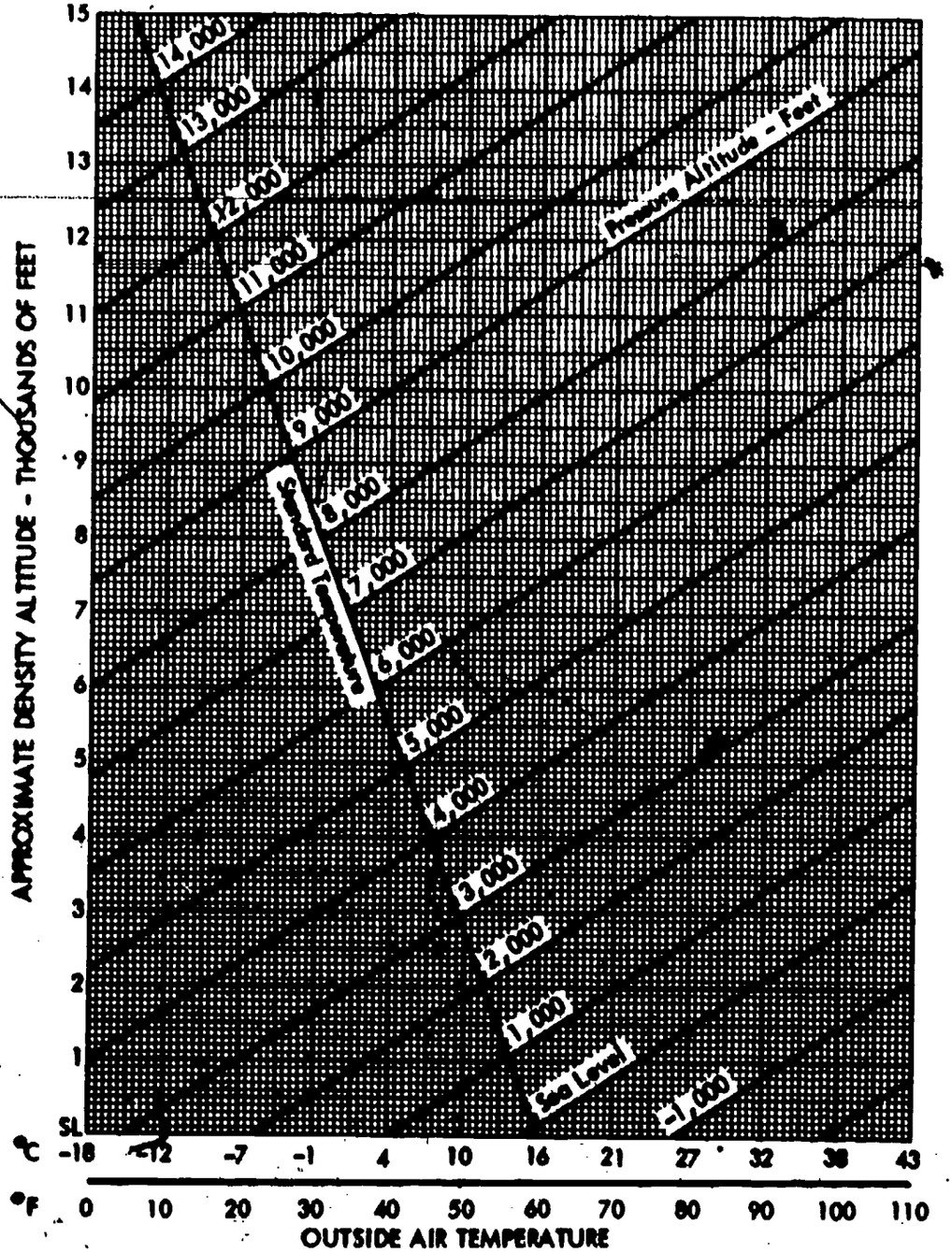
686. Of the factors listed, which would tend to decrease the DENSITY ALTITUDE at a given airport?

Q13
1- Decreasing barometric pressure.
2- Increasing relative humidity.
3- Increasing ambient temperature.
4- Decreasing ambient temperature.

687. Which of these factors would tend to increase the DENSITY ALTITUDE at a given airport?

Q13
1- Decreasing relative humidity.
2- Increasing barometric pressure.
3- Increasing relative humidity.
4- Decreasing ambient temperature.

DENSITY ALTITUDE CHART



Altimeter Setting (In. Hg.)	Altitude Correction For Obtaining Pressure Alt.
28.0	1,824
28.1	1,727
28.2	1,630
28.3	1,533
28.4	1,436
28.5	1,340
28.6	1,244
28.7	1,148
28.8	1,053
28.9	957
29.0	863
29.1	768
29.2	673
29.3	579
29.4	485
29.5	392
29.6	298
29.7	205
29.8	112
29.9	20
29.92	0
30.0	-73
30.1	-165
30.2	-257
30.3	-348
30.4	-440
30.5	-531
30.6	-622
30.7	-712
30.8	-803
30.9	-893
31.0	-983

DO NOT MARK ON CHART

USE PLASTIC OVERLAY

688. Assuming an airport elevation of 3,165 feet, an outside air temperature of 93° F., and an altimeter setting of 30.10" Hg, what is the DENSITY ALTITUDE?

Q12
1- 3,000 feet.
2- 3,850 feet.
3- 6,800 feet.
4- 5,800 feet.

NOTE: Use the chart to the left.

689. If the elevation of an airport is 5,480 feet, the altimeter setting is 29.90" Hg, and the outside air temperature is 80° F., what is the DENSITY ALTITUDE at that airport?

Q12
1- 2,800 feet.
2- 5,400 feet.
3- 8,100 feet.
4- 9,200 feet.

NOTE: Use the chart to the left.

690. Assume these conditions exist:

Outside air temperature . 90° F.
Altimeter setting . . . . 30.20" Hg
Airport elevation . . . . 4,725 feet

Referring to the chart to the left, you determine the density altitude to be approximately

Q12
1- 1,700 feet.
2- 4,400 feet.
3- 7,400 feet.
4- 7,800 feet.

691. GIVEN:

Airport elevation . . . . 3,700 feet
Altimeter setting . . . . 29.60" Hg
Outside air temperature . 75° F.

Using this information and the chart to the left, the density altitude is determined to be approximately .

Q12
1- 3,950 feet.
2- 5,200 feet.
3- 1,000 feet.
4- 5,950 feet.

692. Suppose the elevation of an airport is 3,165 feet, the outside air temperature is 70° F., and the altimeter setting is 30.10" Hg. Using the chart to the left, the density altitude is determined to be approximately

Q12
1- 3,300 feet.
2- 4,300 feet.
3- 3,000 feet.
4- 6,200 feet.

693. GIVEN:

Altimeter setting . . . . 29.90" Hg
Airport elevation . . . . 2,980 feet
Outside air temperature . 64° F.

Using the chart on opposite page, determine the DENSITY ALTITUDE.

Q12
1- 3,000 feet.
2- 3,900 feet.
3- 1,200 feet.
4- 4,600 feet.

694. While on the ground at an airport, you can determine the pressure altitude by

Q12
1- setting the altimeter to the field elevation and reading the value in the altimeter setting window.
2- setting the altimeter to zero and reading the value in the altimeter setting window.
3- setting 29.92 in the airplane's altimeter setting window and reading the indicated altitude.
4- setting the field elevation in the altimeter setting window and reading the indicated altitude.

695. If the elevation of an airport is 5,350 feet, the outside air temperature is 90° F., and the altimeter setting is 30.30" Hg what is the DENSITY ALTITUDE?

Q12
1- 4,900 feet.
2- 8,100 feet.
3- 2,250 feet.
4- 8,600 feet.

NOTE: Use chart on opposite page.

696. Assume these conditions exist:

Altimeter setting . . . . 29.80" Hg
Airport elevation . . . . 3,390 feet
Outside air temperature . 65° F.

Determine the density altitude by using the chart on the opposite page.

Q12
1- 3,500 feet.
2- 500 feet.
3- 4,600 feet.
4- 6,900 feet.

697. GIVEN:

Airport elevation . . . . 4,795 feet
Outside air temperature . 90° F.
Altimeter setting . . . . 29.70" Hg

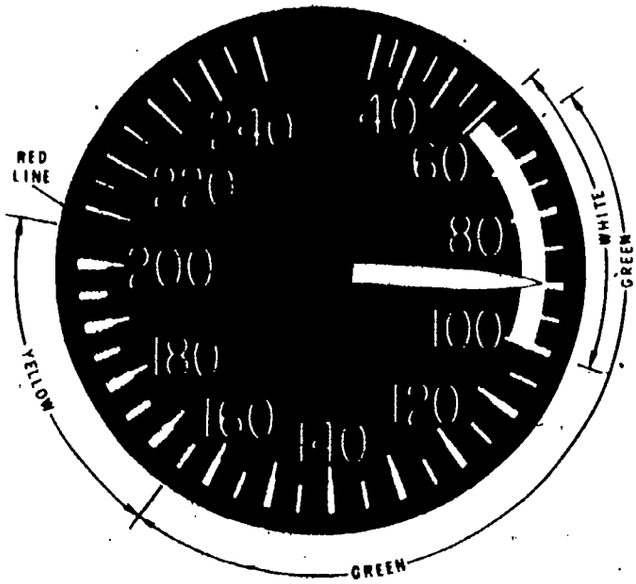
Determine the density altitude.

Q12
1- 4,900 feet.
2- 5,000 feet.
3- 8,100 feet.
4- 8,600 feet.

NOTE: Use chart on opposite page.

698. Suppose that an airplane has been loaded in such a manner that the center of gravity is located aft of the CG limit. One undesirable flight characteristic that a pilot might experience with this airplane would be

Q14
1- a longer takeoff run.
2- the inability to recover from a stalled condition.
3- stalling at higher-than-normal airspeed.
4- the inability to flare during landings.



699. Refer to the color-coded markings on the airspeed indicator above. What is the "caution range" of the airplane?

Q15
1- 0 to 60 MPH.
2- 100 to 165 MPH.
3- 165 to 208 MPH.
4- 60 to 100 MPH.

700. Refer to the airspeed indicator above. Which of the color-coded markings identifies the normal flap operating range?

Q15
1- The lower limit of the white arc to the upper limit of the green arc.
2- The green arc.
3- The white arc.
4- The yellow arc.

701. Refer to the airspeed indicator above. What is the maximum flaps-extended speed?

Q15
1- 165 MPH.
2- 100 MPH.
3- 65 MPH.
4- 60 MPH.

702. Which of the color-coded markings on the airspeed indicator, below left, identifies the power-off stalling speed with wing flaps and landing gear in the landing position?

Q15
1- Upper A/S limit of the green arc.
2- Upper A/S limit of the white arc.
3- Lower A/S limit of the green arc.
4- Lower A/S limit of the white arc.

703. Refer to the airspeed indicator below left. What is the maximum structural cruising speed?

Q15
1- 100 MPH.
2- 165 MPH.
3- 208 MPH.
4- 65 MPH.

704. Refer to the airspeed indicator to the left. The maximum speed at which the airplane can be operated in smooth air is

Q15
1- 100 MPH.
2- 165 MPH.
3- 65 MPH.
4- 208 MPH.

705. Which of the color-coded markings on the airspeed indicator to the left identifies the never-exceed speed?

Q15
1- Lower A/S limit of the yellow arc.
2- Upper A/S limit of the white arc.
3- Upper A/S limit of the green arc.
4- The red radial line.

706. Refer to the airspeed indicator above left. Which color-coded marking identifies the power-off stalling speed with flaps and landing gear in the retracted position?

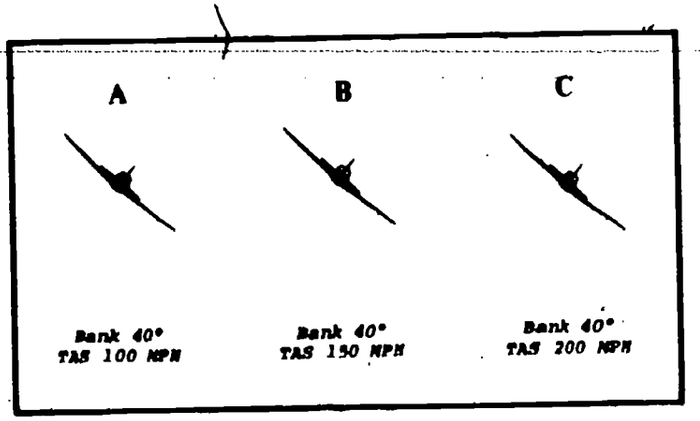
Q15
1- Upper A/S limit of the green arc.
2- Upper A/S limit of the white arc.
3- Lower A/S limit of the green arc.
4- Lower A/S limit of the white arc.

707. Refer to the color-coded markings on the airspeed indicator above left. What is the normal "flap operating range" for the airplane?

Q15
1- 60 to 100 MPH.
2- 65 to 165 MPH.
3- 60 to 208 MPH.
4- 165 to 208 MPH.

708. As you maneuver an airplane you should realize that it can be stalled

Q18
1- only when the nose is high and the airspeed is low.
2- only when the airspeed decreases to the published stalling speed.
3- at any airspeed and in any flight attitude.
4- only when the nose is too high in relation to the horizon.



709. Refer to the illustration above and assume that all three airplanes are making coordinated turns. Which statement is true?

Q17
1- Airplane "A" will have the smallest rate of turn and the greatest radius of turn.
2- Airplane "C" will have the greatest rate of turn and the largest radius of turn.
3- Airplanes "A," "B," and "C" will have equal rates of turn, but airplane "C" will have the largest radius of turn.
4- Airplane "A" will have the greatest rate of turn and the smallest radius of turn.

710. What is an important airspeed limitation that is not color-coded on airspeed indicators?

Q15
1- Maximum flaps-extended speed.
2- Maneuvering speed.
3- Maximum structural cruising speed.
4- Never exceed speed.

711. Concerning airplane limitations, if moderate to severe turbulence is encountered, an indicated airspeed should be maintained that does not exceed the

Q15
1- minimum design cruise speed.
2- maximum structural cruising speed.
3- maximum flaps-extended speed.
4- maneuvering speed.

STALL SPEEDS

GROSS WEIGHT 2750 LBS		ANGLE OF BANK			
		LEVEL	30°	45°	60°
POWER		GEAR AND FLAPS UP			
ON	MPH	62	67	74	88
	KTS	54	58	64	76
OFF	MPH	75	81	89	106
	KTS	65	70	77	92
		GEAR AND FLAPS DOWN			
ON	MPH	54	58	64	76
	KTS	47	50	56	66
OFF	MPH	66	71	78	93
	KTS	57	62	68	81

712. Refer to the chart above. Select the true statement concerning the effect on stall speeds when operating with the gear and flaps up and with the gear and flaps down.

Q18
1- In a 60° bank with power on or power off, the airplane will stall at a lower airspeed with gear and flaps up than with the gear and flaps down.
2- In level flight with power off, a stall would occur at a higher airspeed with gear and flaps down than with gear and flaps up.
3- In power-on turns, regardless of the gear and flaps position, the stall will occur at an airspeed 6-7 MPH higher with 45° of bank than with 30° of bank.
4- In a 30° bank with power on, the stall occurs at a higher airspeed with gear and flaps down than when they are up.

713. Refer to the Stall Speeds Chart above and select the true statement.

Q18
1- The stall speed in level flight, with power on and gear and flaps up, is the same as the stall speed in a 45° bank, with power off and gear and flaps down.
2- The power-on stalling speed in a 60° bank is 22-26 MPH higher than level flight stalling speed with gear and flaps either up or down.
3- The stalling speed in a 30° bank with power on or power off, would be the same regardless of whether the gear and flaps are up or down.
4- The airplane with gear and flaps up and power on, would stall at a 40 MPH higher airspeed in a 45° bank than in level flight.

LANDING DISTANCE

FLAPS LOWERED TO 40° POWER OFF
HARD SURFACE RUNWAY - ZERO WIND

GROSS WEIGHT LBS.	APPROACH SPEED, IAS, MPH	AT SEA LEVEL & 59° F.		AT 2500 FT. & 50° F.		AT 5000 FT. & 41° F.		AT 7500 FT. & 32° F.	
		GROUND ROLL	TOTAL TO CLEAR 50 FT. OBS	GROUND ROLL	TOTAL TO CLEAR 50 FT. OBS	GROUND ROLL	TOTAL TO CLEAR 50 FT. OBS	GROUND ROLL	TOTAL TO CLEAR 50 FT. OBS
1600	60	445	1075	470	1135	495	1195	520	1255

NOTES: 1. Decrease the distances shown by 10% for each 4 knots of headwind.
2. Increase the distance by 10% for each 60° F. temperature increase above standard.
3. For operation on a dry, grass runway, increase distances (both "ground roll" and "total to clear 50 ft. obstacle") by 20% of the "total to clear 50 ft. obstacle" figure.

714. Assume the following conditions exist and apply them to the chart above:

Gross weight . . . . . 1,600 lbs.
Pressure altitude . . Sea level
Headwind . . . . . 16 knots
Temperature . . . . . 59° F.

What would be the landing ground roll distance?

Q20
1- 267 feet.
2- 427 feet.
3- 445 feet.
4- 623 feet.

715. You plan to land on a dry grass runway. Assume the following conditions exist and apply them to the chart above:

Gross weight . . . . 1,600 lbs.
Pressure altitude . . 7,500 feet
Wind . . . . . Calm
Temperature . . . . . 32° F.

The total landing distance required to clear a 50-foot obstacle on final approach would be

Q20
1- 1,425 feet.
2- 1,506 feet.
3- 1,295 feet.
4- 1,355 feet.

716. GIVEN:

Gross weight . . . . . 1,600 lbs.
Pressure altitude . . 3,750 feet
Headwind . . . . . 12 knots
Temperature . . . . . 46° F.

Under these conditions and using the chart above, what would be the approximate landing ground roll distance?

Q20
1- 338 feet.
2- 470 feet.
3- 445 feet.
4- 432 feet.

717. You plan to land on a dry grass runway. Assume the following conditions exist and apply them to the chart above:

Gross weight . . . . . 1,600 lbs.
Pressure altitude . . Sea level
Wind . . . . . Calm
Temperature . . . . . 59° F.

The total landing distance required to clear a 50-foot obstacle on final approach would be

Q20
1- 860 feet.
2- 1,520 feet.
3- 1,290 feet.
4- 1,075 feet.

718. Consider the following conditions and use the chart above:

Gross weight . . . . . 1,600 lbs.
Pressure altitude . . 7,500 feet
Headwind . . . . . 32 knots
Temperature . . . . . 32° F.

The approximate total distance required to land over a 50-foot obstacle is

Q20
1- 1,255 feet.
2- 251 feet.
3- 753 feet.
4- 2,259 feet.

719. Assume the following conditions exist and apply them to the chart above:

Gross weight . . . . . 1,600 lbs.
Pressure altitude . . 1,250 feet
Headwind . . . . . 4 knots
Temperature . . . . . 55° F.

What would be the approximate landing ground roll distance?

Q20
1- 458 feet.
2- 412 feet.
3- 445 feet.
4- 504 feet.

720. Refer to the Landing Distance Chart to the left and apply the following conditions:

Gross weight . . . . . 1,600 lbs.
Pressure altitude . . 2,500 feet
Headwind . . . . . 20 knots
Temperature . . . . . 50° F.

The approximate total distance required to land over a 50-foot obstacle is

Q20
1- 1,080 feet.
2- 1,115 feet.
3- 568 feet.
4- 1,703 feet.

721. GIVEN:

Gross weight . . . . . 1,600 lbs.
Pressure altitude . . 3,750 feet
Wind . . . . . Calm
Temperature . . . . . 46° F.

Under these conditions and using the Landing Distance Chart to the left, what would be the approximate total distance required to land over a 50-foot obstacle?

Q20
1- 1,105 feet.
2- 1,195 feet.
3- 1,135 feet.
4- 1,165 feet.

722. Which of the following would provide the greatest gain in altitude in the shortest distance during climb after takeoff?

Q21
1- Steepest pitch attitude.
2- Cruising climb speed.
3- Best rate-of-climb speed.
4- Best angle-of-climb speed.

723. After takeoff, which of the following airspeeds would permit the pilot to gain the most altitude in a given period of time?

Q21
1- Cruising climb speed.
2- Best rate-of-climb speed.
3- Best angle-of-climb speed.
4- Minimum control speed.

724. Which of the following items are included in the licensed empty weight of an airplane?

Q22
1- Hydraulic fluid and usable fuel.
2- Only the airframe, powerplant, and equipment installed by the manufacturer.
3- Full fuel tanks and engine oil to capacity, but excluding crew and baggage.
4- Unusable fuel and optional equipment.

PILOT'S OPERATING MANUAL
(Excerpt)

AIRCRAFT DESIGNATION:- BIRDCRAFT M-180
(Four-place, Single-engine, Land Monoplane)

ENGINE OPERATING LIMITS:- 180 HP

FUEL SYSTEM:- Float-Type Carburetor
91/96 minimum grade fuel
Fuel Capacity 30 gallons
in each wing tank (2 tanks)
58.8 gallons usable

OIL CAPACITY:- 8 quarts (not included in empty weight)

PROPELLER:- Fixed Pitch
LANDING GEAR:- Fixed Tricycle Gear
WING FLAPS:- 0° to 35° Manual

EMPTY WEIGHT:- 1,446 lbs.
MAX. GROSS WEIGHT:- 2,450 lbs.

MAX. WEIGHT IN BAGGAGE COMPARTMENT - 120 lbs.

●●●●

725. Refer to the excerpt above. What is the combined maximum weight of four persons and baggage that can be loaded, without exceeding the maximum certificated gross weight, if the airplane is serviced to capacity with fuel and oil?

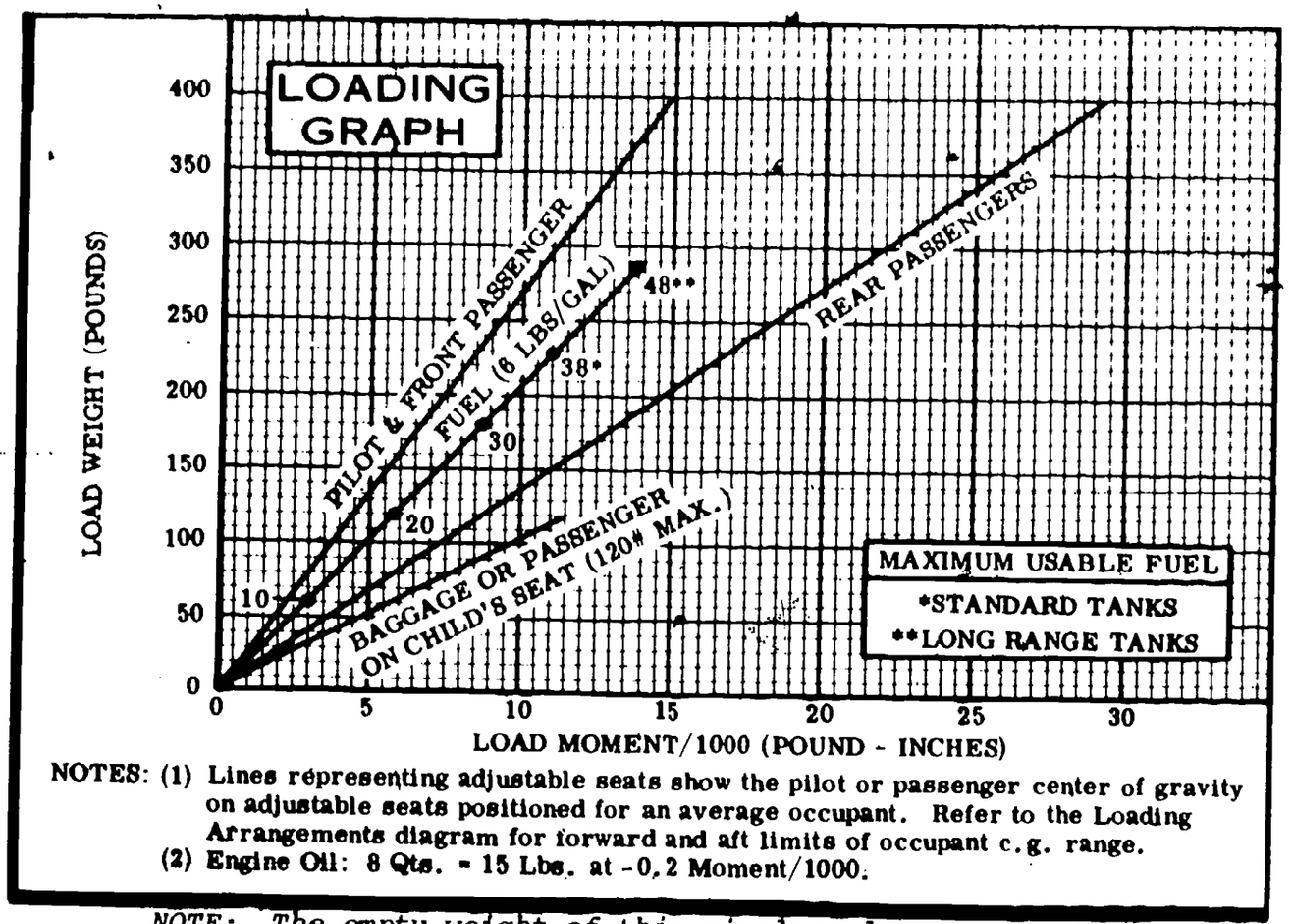
Q22
1- 591 pounds.
2- 636 pounds.
3- 654 pounds.
4- 740 pounds.

726. Refer to the excerpt above. Assume you plan to load your airplane with 90 pounds of baggage, 8 quarts of oil, and four persons whose total weight is 735 pounds. What is the total amount of usable fuel that can be aboard without exceeding the maximum certificated gross weight?

Q22
1- 16.5 gallons.
2- 27.3 gallons.
3- 29.0 gallons.
4- 31.5 gallons.

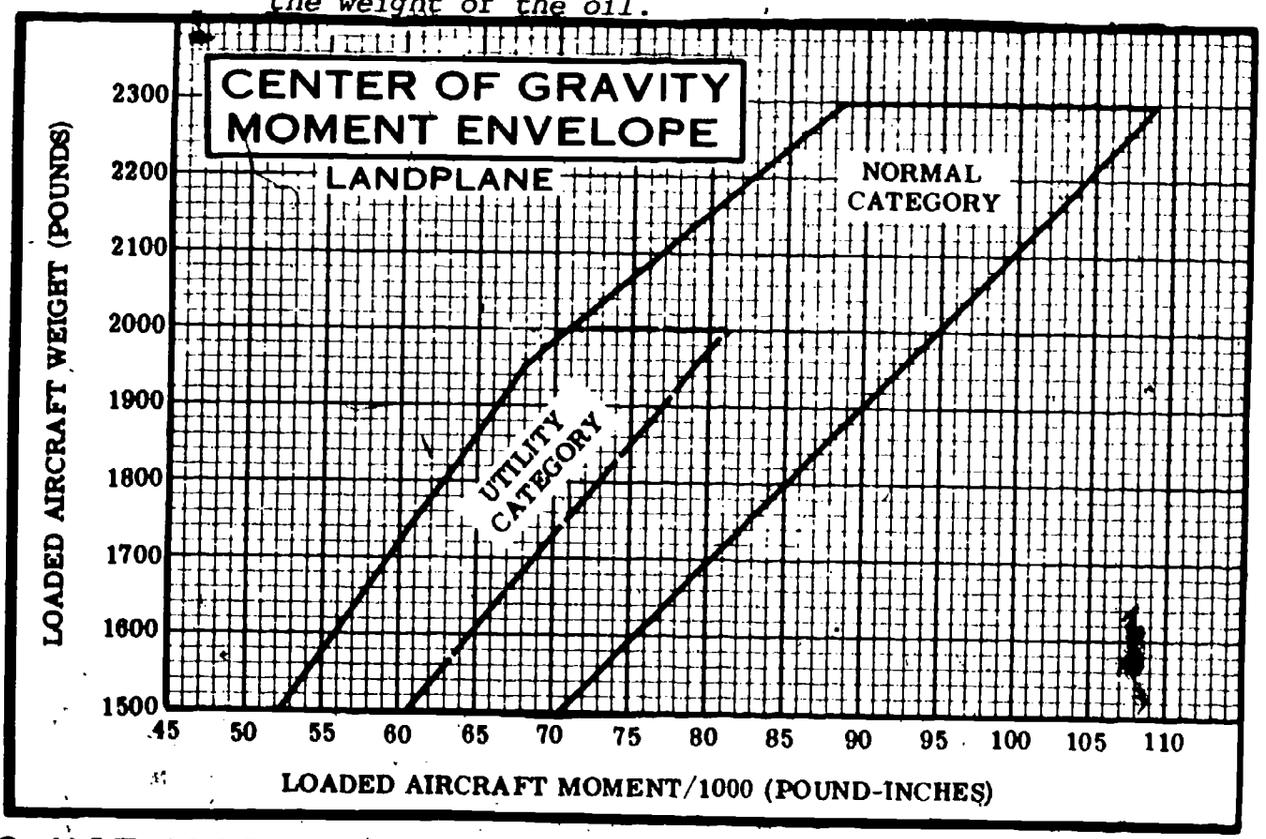
727. Refer to the excerpt above. Assume that the total weight of the pilot and passengers is 620 pounds, the fuel tanks are full, and the airplane is serviced with 8 quarts of oil. How much baggage could be loaded without exceeding the maximum certificated gross weight of the airplane?

Q22
1- 16 pounds.
2- 27 pounds.
3- 13 pounds.
4- 31 pounds.



NOTES: (1) Lines representing adjustable seats show the pilot or passenger center of gravity on adjustable seats positioned for an average occupant. Refer to the Loading Arrangements diagram for forward and aft limits of occupant c.g. range.
(2) Engine Oil: 8 Qts. = 15 Lbs. at -0.2 Moment/1000.

NOTE: The empty weight of this airplane does not include the weight of the oil.



DO NOT MARK ON CHARTS USE PLASTIC OVERLAY

728. GIVEN:

	WEIGHT (LBS.)	MOMENT/1000 LB. INCHES
Empty weight . . .	1,364	51.7
Pilot & front seat passenger	260	?
Fuel (30 gals. usable)	180	?
Oil (8 qts.) . . .	15	-0.2

Based on the above information and using the charts to the left, what would be the center of gravity moment/1000?

Q22
1- 69.9 lb. inches-utility category.
2- 75.0 lb. inches-normal category.
3- 51.9 lb. inches-utility category.
4- 55.1 lb. inches-normal category.

729. Refer to the charts to the left.

GIVEN:

	WEIGHT (LBS.)	MOMENT/1000 LB. INCHES
Empty weight . . .	1,364	51.7
Pilot & front seat passenger .	380	?
Rear passengers .	250	?
Fuel (38 gals. usable)	228	?
Oil (8 qts.) . . .	15	-0.2

With a maximum certificated gross weight of 2,300 pounds, based on the above, the aircraft is

Q22
1- within gross weight limit and within CG limits.
2- within gross weight limit, but exceeds forward CG limit.
3- over gross weight limit, but within CG limits.
4- within gross weight limit, but exceeds aft CG limit.

730. When computing weight and balance, the "empty weight" includes the weight of the airframe, engine(s), and all items of operating equipment permanently installed. Empty weight also includes

Q22
1- all usable fuel and oil, but does not include any radio equipment or instruments that were installed by someone other than the manufacturer.
2- all usable fuel, maximum oil, hydraulic fluid, but does not include the weight of pilot, passengers, or baggage.
3- the unusable fuel, hydraulic fluid, and undrainable oil (or, in some aircraft all of the oil).
4- all usable fuel and oil.

731. Assume an airplane is loaded as follows:

	WEIGHT (LBS.)	MOMENT/1000 LB. INCHES
Empty weight . . .	1,364	51.7
Pilot & front seat passenger .	355	?
Baggage	90	?
Fuel (38 gals. usable)	228	11.0
Oil (8 qts.) . . .	15	-0.2

Refer to the charts to the left. What would be the gross weight and center of gravity moment/1000?

Q22
1- 2,037 lbs.; 82.1 pound-inches.
2- 1,940 lbs.; 80.1 pound-inches.
3- 2,052 lbs.; 84.4 pound-inches.
4- 2,200 lbs.; 85.3 pound-inches.

732. Using the charts on the previous page, and applying the following data, what would the gross weight and center of gravity moment/1000 be for the aircraft?

	WEIGHT (LBS.)	MOMENT/1000 LB. INCHES
Empty weight . . .	1,364	51.7
Pilot & front seat passenger .	280	?
Rear passengers .	160	?
Baggage	120	?
Fuel (48 gals. usable)	288	13.8
Oil (8 qts.) . . .	15	-0.2

Q22
1- 2,227 lbs.; 80.9 pound-inches.
2- 2,320 lbs.; 95.3 pound-inches.
3- 2,123 lbs.; 79.3 pound-inches.
4- 2,227 lbs.; 98.9 pound-inches.

733. Assume an airplane is loaded as follows:

	WEIGHT (LBS.)	MOMENT/1000 LB. INCHES
Empty weight . . .	1,364	51.7
Pilot & front seat passenger .	400	?
Baggage	120	?
Fuel (38 gals. usable)	228	11.0
Oil (8 qts.) . . .	15	-0.2

Refer to the charts on the previous page. With a maximum certificated gross weight of 2,300 pounds, you determine that the airplane is

Q22
1- within gross weight limit, but exceeds the aft CG limit.
2- within gross weight limit and within CG limits.
3- over gross weight limit, but within CG limits.
4- within gross weight limit, but exceeds the forward CG limit.

PILOT'S OPERATING HANDBOOK
(Excerpt)

AIRCRAFT DESIGNATION:- Century 72
(Four-place, Single-engine, Land Monoplane)

ENGINE OPERATING LIMITS:- 150 HP at 2700 RPM

FUEL SYSTEM:- Float-Type Carburetor
- *Fuel Capacity Standard Tanks- two 21 gal. tanks (capacity 42 gals.) - max. usable 38 gals.*
- *Optional long range tanks - total capacity 52 gals. - max. usable 48 gals.*

OIL CAPACITY:- 8 quarts (not included in empty weight)
PROPELLER:- Fixed Pitch
LANDING GEAR:- Fixed Tricycle Gear
WING FLAPS:- Electrically operated 0° to 40°

EMPTY WEIGHT:- 1,364 lbs.
MAX. GROSS WEIGHT:- 2,300 lbs.

MAX. WEIGHT IN BAGGAGE COMPARTMENT - 120 lbs.

734. Refer to the excerpt above and assume the airplane is loaded as follows:

Pilot	160 lbs.
Front seat passenger	148 lbs.
Rear seat passenger	122 lbs.
Rear seat passenger	176 lbs.
Baggage	80 lbs.
Oil	Full
Fuel (standard tanks)	Full

This airplane is loaded

Q22
1- 13 lbs. less than the maximum allowable gross weight.
2- 17 lbs. more than the maximum allowable gross weight.
3- 22 lbs. less than the maximum allowable gross weight.
4- 7 lbs. less than the maximum allowable gross weight.

735. Refer to the excerpt above. Assume you plan to load the airplane with 120 lbs. of baggage, 8 qts. of oil, and four persons whose total weight is 698 lbs. What is the total amount of usable fuel (standard tanks) that can be aboard without exceeding the maximum certificated gross weight?

Q22
1- 13.8 gallons.
2- 17.1 gallons.
3- 20.8 gallons.
4- 38.0 gallons.

736. Refer to the excerpt to the left. What is the combined maximum weight of four persons and baggage that can be loaded, without exceeding the maximum certificated gross weight, if the airplane is serviced to capacity with oil and fuel (long range tanks)?

Q22
1- 633 lbs.
2- 639 lbs.
3- 609 lbs.
4- 669 lbs.

737. Refer to the excerpt to the left. Suppose you have filled the airplane's long range fuel tanks to capacity, and there are 8 qts. of oil in the engine. You wish to carry four persons aboard, whose total weight is 680 lbs. There will be no baggage aboard. Would this airplane be within maximum certificated gross weight limits?

Q22
1- No, the airplane is 71 lbs. over allowable gross weight.
2- Yes, the airplane is 47 lbs. under allowable gross weight.
3- No, the airplane is 123 lbs. over allowable gross weight.
4- No, the airplane is 47 lbs. over allowable gross weight.

738. Refer to the excerpt to the left above. Assume that you plan to load the airplane with three persons whose total weight is 572 lbs., and baggage that weighs 115 lbs. There are 8 qts. of oil in the engine. Under these conditions, the total amount of usable fuel that can be carried in the long range fuel tanks without exceeding the maximum certificated gross weight is

Q22
1- 30.4 gallons.
2- 39.0 gallons.
3- 48.0 gallons.
4- 51.2 gallons.

739. Refer to the excerpt to the left above. During the preflight, you note there are 8 qts. of oil in the engine and the standard fuel tanks are filled to capacity. The total weight of the pilot and passengers is 670 lbs. What is the total weight of the baggage, if any, that can be loaded aboard without exceeding the maximum certificated gross weight of the airplane?

Q22
1- 83 lbs.
2- 47 lbs.
3- 23 lbs.
4- No baggage, as the airplane is already overloaded.

PILOT'S OPERATING HANDBOOK
(Excerpt)

AIRCRAFT DESIGNATION:- *Raycraft 15*
Single-Engine, Land Monoplane
(Seating Arrangement--Pilot and passenger side-by-side plus a child's seat in the baggage area)

ENGINE OPERATING LIMITS:- 100 HP

FUEL SYSTEM:- Float-Type Carburetor
- Fuel Capacity Standard Tanks - two 13 gal. tanks (capacity 26 gals.) - maximum usable 22.5 gals.
- *Optional long range tanks* - total capacity 38 gals. - maximum usable 35 gals.

OIL CAPACITY:- 6 quarts - included in empty weight

PROPELLER:- Fixed Pitch
LANDING GEAR:- Fixed Tricycle Gear
WING FLAPS:- Electrically operated 0° to 40°

EMPTY WEIGHT:- 1,104 lbs.
MAX. GROSS WEIGHT:- 1,600 lbs.

MAX. WEIGHT IN BAGGAGE COMPARTMENT - 120 lbs.

740. Refer to the excerpt above. What is the combined maximum weight of two persons and baggage that can be loaded, without exceeding the maximum certificated gross weight, if the airplane is serviced with 6 qts. of oil and the standard fuel tanks are full?

Q22
1- 350 pounds.
2- 355 pounds.
3- 340 pounds.
4- 361 pounds.

741. Refer to the excerpt above. Assume that the total weight of the pilot and passenger is 285 pounds, and the airplane's standard fuel tanks are full. Under these conditions, how much baggage could be loaded without exceeding the maximum certificated gross weight?

Q22
1- 44 pounds.
2- 56 pounds.
3- 1 pound.
4- 76 pounds.

742. Refer to the excerpt to the left and assume the airplane is loaded as follows:

Pilot . . . . . 170 lbs.
Passenger . . . . . 125 lbs.
Baggage . . . . . 65 lbs.
Oil . . . . . Full
Fuel (standard tanks) . Full

This airplane is loaded

Q22
1- 10 pounds more than the maximum allowable gross weight.
2- 74 pounds more than the maximum allowable gross weight.
3- 1 pound less than the maximum allowable gross weight.
4- 10 pounds less than the maximum allowable gross weight.

743. Refer to the excerpt to the left. What is the combined maximum weight of two persons (with no baggage) that can be loaded, without exceeding the maximum certificated gross weight, if the airplane is serviced to oil capacity and the long range fuel tanks are full?

Q22
1- 286 pounds.
2- 331 pounds.
3- 275 pounds.
4- 361 pounds.

744. Refer to the excerpt to the left above and assume the airplane is loaded as follows:

Pilot . . . . . 170 lbs.
Passenger . . . . . 195 lbs.
Oil . . . . . Full
Fuel (standard tanks) . Full

With reference to maximum certificated gross weight, the airplane is loaded

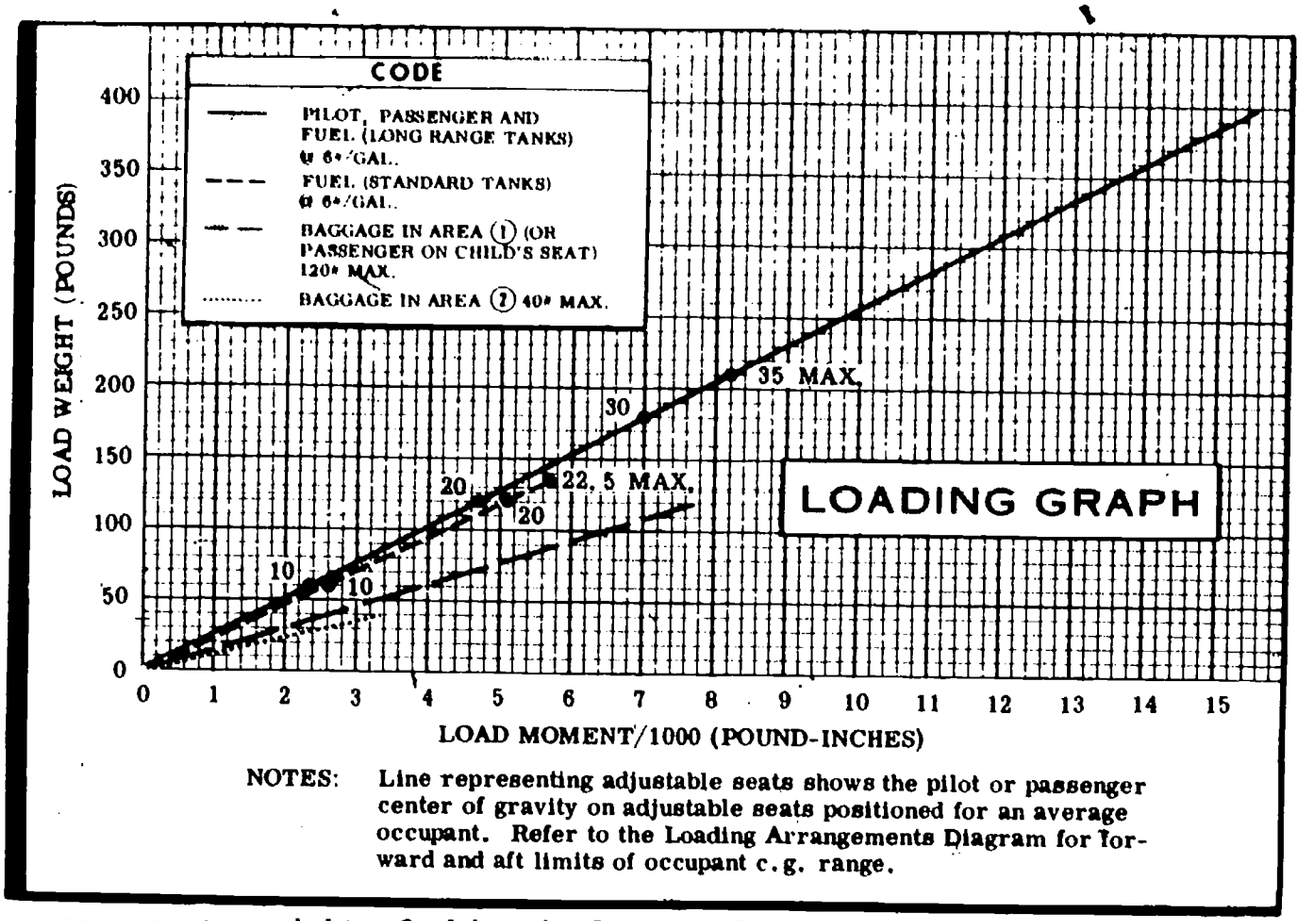
Q22
1- 4 pounds over maximum allowable.
2- 6 pounds under maximum allowable.
3- 16 pounds over maximum allowable.
4- 21 pounds under maximum allowable.

745. GIVEN:

Pilot . . . . . 155 lbs.
Passenger . . . . . 114 lbs.
Baggage . . . . . 28 lbs.
Oil . . . . . Full
Fuel (long range tanks) . Full

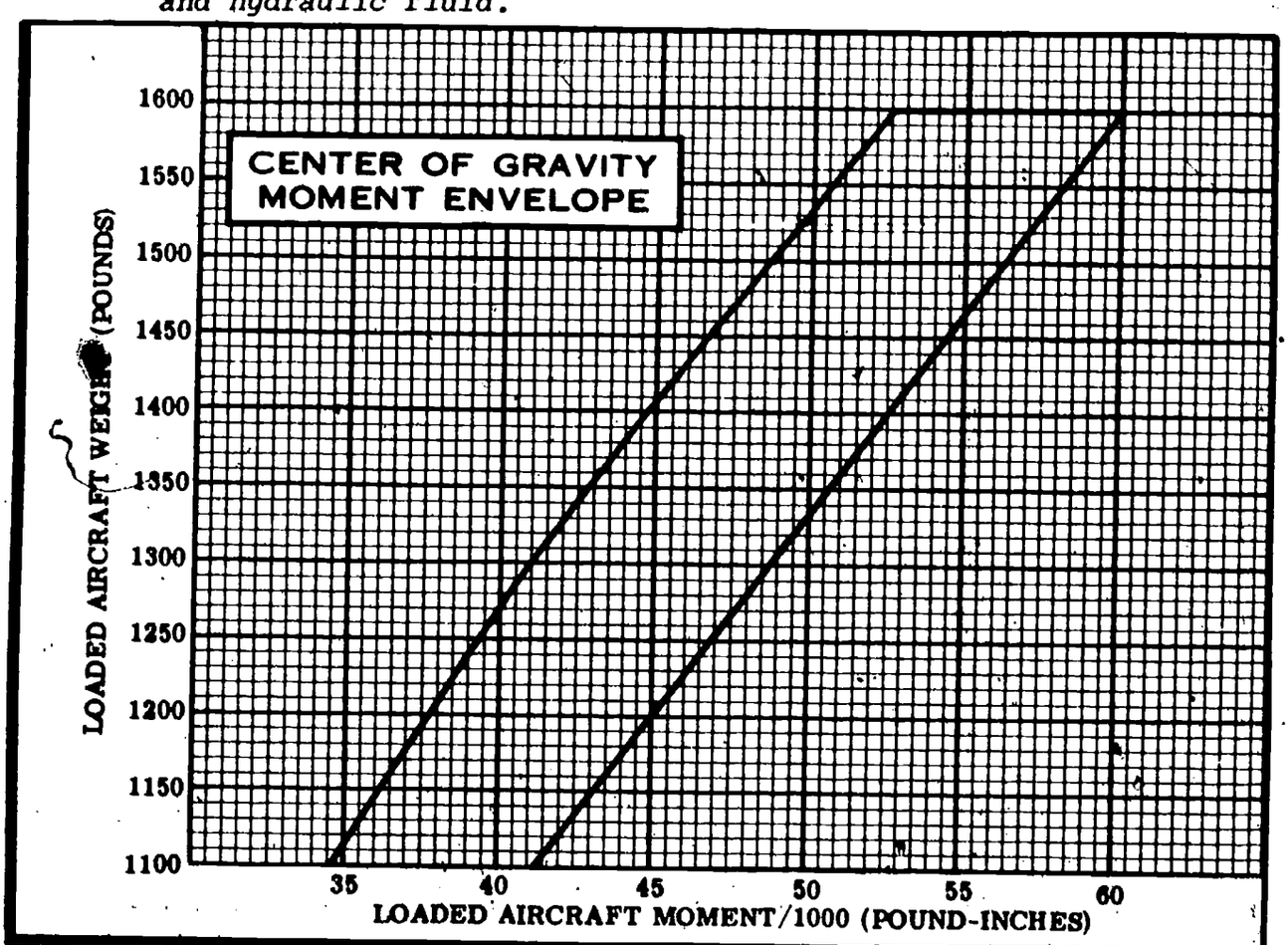
Using the given data and the excerpt above left, you determine the airplane, in respect to maximum certificated gross weight limit, is loaded

Q22
1- 11 pounds over maximum allowable.
2- 56 pounds over maximum allowable.
3- 11 pounds under maximum allowable.
4- 64 pounds under maximum allowable.



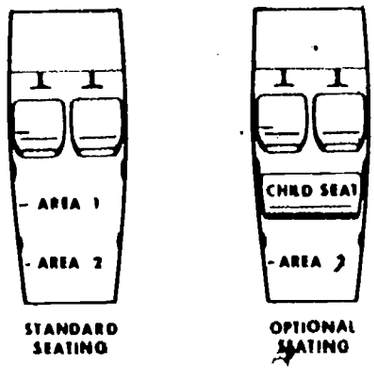
NOTES: Line representing adjustable seats shows the pilot or passenger center of gravity on adjustable seats positioned for an average occupant. Refer to the Loading Arrangements Diagram for forward and aft limits of occupant c.g. range.

NOTE: Empty weight of this airplane includes unusable fuel, full oil, and hydraulic fluid.



DO NOT MARK ON CHARTS USE PLASTIC OVERLAY

LOADING ARRANGEMENTS



STANDARD SEATING — OPTIONAL SEATING

BAGGAGE AREA MAXIMUM ALLOWABLE LOADS

AREA (1) = 120 POUNDS
AREA (2) = 40 POUNDS
AREAS (1) + (2) = 120 POUNDS

Maximum Certificated Gross Weight of This Airplane is 1,600 lbs.

746. Refer to the charts to the left and the illustration above. Assume an airplane is loaded as follows:

	WEIGHT (LBS.)
Empty weight	1,100
Pilot & front passenger . . .	320
Baggage (area 1)	60

What is the maximum amount of usable fuel that may be put into the standard tanks without exceeding the maximum gross weight limit?

Q22
1- 17.8 gallons.
2- 17.0 gallons.
3- 15.8 gallons.
4- 20.0 gallons.

747. GIVEN:

	WEIGHT (LBS.)	MOMENT/1000 LB. INCHES
Empty weight (oil included)	1,100	35.9
Pilot & passenger (front seat) . .	310	?
Fuel (standard tanks)	135	?
Baggage (area 1) .	55	?

Based on this information and using the appropriate chart to the left and illustration above, what would be the center of gravity moment/1000?

Q22
1- 51.8 pound-inches.
2- 48.5 pound-inches.
3- 55.5 pound-inches.
4- 57.3 pound-inches.

748. Refer to the illustration to the left and charts on the opposite page.

GIVEN:

	WEIGHT (LBS.)	MOMENT/1000 LB. INCHES
Empty weight	1,100	35.9
Pilot & full fuel (long range tanks).	380	?
Baggage (area 1) . .	75	?
Baggage (area 2) . .	40	?

You determine that the airplane

Q22
1- over gross weight limit, but within CG limits.
2- within gross weight limit, but exceeds aft CG limit.
3- over gross weight limit and exceeds the aft CG limit.
4- within gross weight limit and within CG limits.

749. Refer to the appropriate chart on opposite page and the illustration to the left. Assume an airplane is loaded as follows:

	WEIGHT (LBS.)	MOMENT/1000 LB. INCHES
Empty weight	1,100	35.9
Pilot & passenger (front seat) . . .	300	?
Fuel, 15 gals. usable (standard tanks) .	90	?
Baggage (area 2) . .	35	?

What would be the gross weight and center of gravity moment/1000?

Q22
1- 1,500 lbs.; 52.9 pound-inches.
2- 1,490 lbs.; 49.7 pound-inches.
3- 1,525 lbs.; 54.4 pound-inches.
4- 1,525 lbs.; 56.3 pound-inches.

750. GIVEN:

	WEIGHT (LBS.)	MOMENT/1000 LB. INCHES
Empty weight	1,100	35.9
Pilot & passenger .	310	?
Fuel, 22.5 gals. usable (standard tanks)	?	?
Passenger on child seat (area 1) . .	50	?

Based on this information and the charts on opposite page and to the left above, what would be the maximum allowable load that can be placed in baggage area 2, without exceeding the gross weight and center of gravity aft limits?

Q22
1- 5 pounds.
2- 10 pounds.
3- 40 pounds.
4- No additional baggage in area 2.

751. GIVEN:

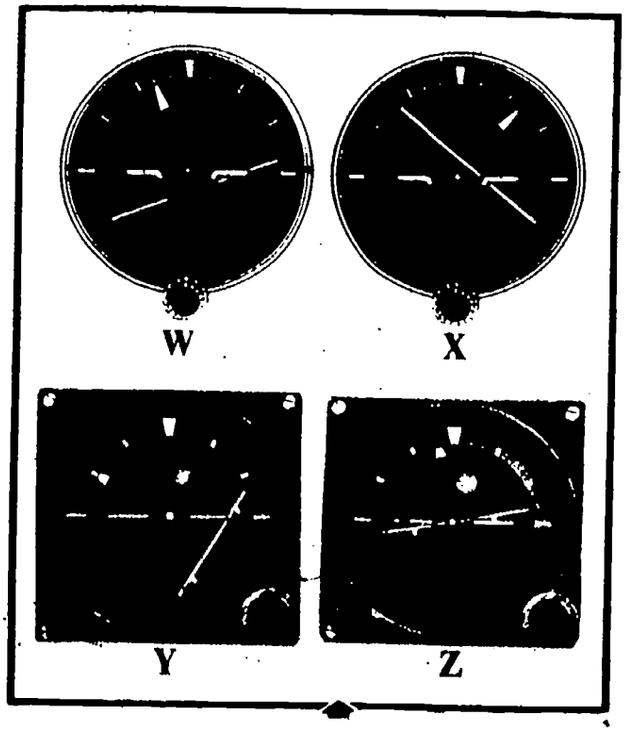
Indicated altitude . . . . 7,000 feet
Outside air temperature . +20° C

Based on these conditions what is the true altitude?

R04
1- 6,775 feet.
2- 7,275 feet.
3- 6,550 feet.
4- 7,475 feet.

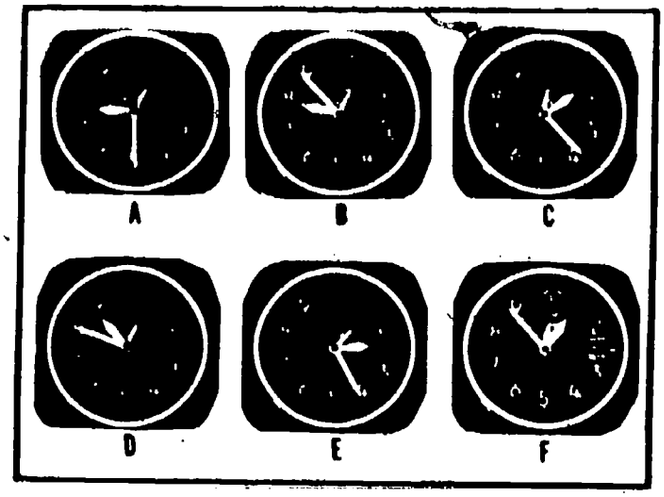
752. If baggage originally in the baggage compartment (located aft of the cabin) was moved to the cabin area, how would this affect the airplane's center of gravity?

Q23
1- The CG would be unpredictable as flight altitude changes.
2- The CG would move forward.
3- The CG would remain the same.
4- The CG would move aft.



753. Refer to the attitude indicators illustrated above and select the true statement concerning the attitude of the airplane.

R01
1- Instrument "X" depicts a 40° banked turn to the right.
2- Instrument "Y" depicts a 60° banked turn to the right.
3- Instrument "W" depicts a 20° banked turn to the left.
4- Instrument "Z" depicts a 10° banked level turn to the left.



754. Which of the altimeters above display an indicated altitude of more than 2,000 feet?

R04
1- A, C, E, F.
2- A, B, D, E.
3- B, E, F.
4- A, C, E.

755. Which of the altimeters above display an indicated altitude of more than 5,000 feet?

R04
1- A, B, C, E.
2- B, E, F.
3- A, B, D, E.
4- A, C, F.

756. Refer to altimeter "E" above. What altitude is indicated?

R04
1- 10,420 feet.
2- 2,420 feet.
3- 12,420 feet.
4- 20,420 feet.

757. Refer to altimeter "B" above. Which one of the following indications is correct?

R04
1- 1,880 feet.
2- 880 feet.
3- 7,880 feet.
4- 8,880 feet.

758. Altimeter "F" above indicates an altitude of

R04
1- 880 feet.
2- 9,880 feet.
3- 10,880 feet.
4- 1,880 feet.

759. The pitot-static system is a source of pressure for which of the instruments listed below?

R08
1- Airspeed indicator only.
2- Airspeed indicator, altimeter, vertical-speed indicator, turn-and-slip indicator, and heading indicator.
3- Altimeter, vertical-speed indicator, and heading indicator.
4- Altimeter, vertical-speed indicator, and airspeed indicator.

760. The pitot system provides impact pressure for only the

R08
1- airspeed indicator, vertical-speed indicator, and altimeter.
2- altimeter and vertical-speed indicator.
3- vertical-speed indicator.
4- airspeed indicator.

761. Which statement is true in regard to the effects of atmospheric conditions on the indication of a pressure altimeter? When flying in air that is

R04
1- COLDER than standard temperature the aircraft will be higher than the altimeter indicates.
2- WARMER than standard temperature the aircraft will be at the altitude indicated on the altimeter.
3- COLDER than standard temperature the aircraft will be lower than the altimeter indicates.
4- WARMER than standard temperature the aircraft will be lower than the altimeter indicates.

762. GIVEN:

Pressure altitude . . . . . 5,000 feet
Outside air temperature . . 0° C.

Based on this data what is the true altitude?

R04
1- 4,800 feet.
2- 4,900 feet.
3- 5,300 feet.
4- 4,700 feet.

763. In the Northern Hemisphere, a magnetic compass will normally indicate initially a turn toward the WEST if

R09
1- an aircraft is decelerated while on a south heading.
2- an aircraft is accelerated while on a north heading.
3- a left turn is entered from a north heading.
4- a right turn is entered from a north heading.

764. During flight, when are the indications of a magnetic compass accurate?

R09
1- Only in straight-and-level unaccelerated flight.
2- As long as the airspeed is constant.
3- During turns if the bank does not exceed 18°.
4- In all conditions of flight.

765. In the Northern Hemisphere, a magnetic compass normally indicates initially a turn toward the EAST if

R09
1- an aircraft is decelerated while on a south heading.
2- an aircraft is accelerated while on a north heading.
3- a right turn is entered from a north heading.
4- a left turn is entered from a north heading.

766. If the pitot tube and outside static vents or ports were clogged, which instrument or instruments would be affected?

R08
1- The airspeed indicator, altimeter, and turn-and-slip indicator would provide inaccurate instrument readings.
2- The altimeter, vertical-speed indicator, and airspeed indicator would provide inaccurate instrument readings.
3- The only instruments that would provide erroneous indications would be the airspeed indicator and altimeter.
4- The airspeed indicator would indicate excessively high airspeeds.

767. When taxiing with strong quartering tailwinds, which of the following aileron positions should be generally used?

U05
1- Aileron PARALLEL to the ground on the side from which the wind is blowing.
2- Neutral (streamlined position).
3- Aileron UP on the side from which the wind is blowing.
4- Aileron DOWN on the side from which the wind is blowing.

768. Which of the following aileron positions should you generally use when taxiing in strong quartering headwinds?

U05
1- Aileron up on the side from which the wind is blowing.
2- Aileron down on the side from which the wind is blowing.
3- Neutral.
4- Aileron as stated in response 1 for high-wing airplanes, but as stated in response 3 for low-wing airplanes.

769. If severe turbulence is encountered, the airplane's airspeed should be reduced to

U04
1- maneuvering speed.
2- the minimum steady flight speed in the landing configuration.
3- normal operation speed.
4- maximum structural cruising speed.

770. The most important rule to remember in the event of a power failure after becoming airborne, is to

U03
1- quickly check the fuel supply for possible fuel exhaustion.
2- determine the wind direction to plan for your forced landing.
3- turn back immediately to the takeoff runway.
4- maintain safe airspeed.

771. When the altimeter setting is adjusted to 29.92 the altimeter indicates

R11
1- density altitude.
2- pressure altitude.
3- indicated altitude.
4- true altitude.

772. Pressure altitude can be determined by which one of the following methods?

R11
1- Adjust the altimeter setting window to 29.92 and read pressure altitude directly from the altimeter.
2- Adjust the altimeter to the airport elevation and read pressure altitude.
3- Pressure altitude can be determined only by the use of a computer.
4- Set the altimeter to the current altimeter setting and read pressure altitude directly from the altimeter.

773. In the Northern Hemisphere, if an airplane is accelerated or decelerated, the magnetic compass will normally indicate

R09
1- a turn momentarily, with changes in airspeed on any heading.
2- correctly when on a north or south heading while either accelerating or decelerating.
3- a turn toward the south while accelerating on a west heading.
4- a turn toward the north while decelerating on an east heading.

774. In the Northern Hemisphere, a magnetic compass will normally indicate a turn toward the NORTH if

R09
1- a right turn is entered from an east heading.
2- a left turn is entered from a west heading.
3- an aircraft is decelerated while on an east or west heading.
4- an aircraft is accelerated while on an east or west heading.

775. The indication of a magnetic compass in the Northern Hemisphere, when turning away from a northerly heading, normally

R09
1- precedes the turn and indicates a greater amount of turn than has actually been made.
2- lags or indicates a turn in the opposite direction.
3- is correct provided the turn is properly coordinated.
4- is inversely proportional to the magnetic variation for the particular area.

776. One of the main functions of flaps during the approach and landing is to

U06
1- decrease the angle of descent without increasing the airspeed.
2- permit a touchdown at a higher indicated airspeed.
3- increase the angle of descent without increasing airspeed.
4- decrease lift, thus enabling a steeper-than-normal approach to be made.

777. Which statement is true concerning the use of flaps during approach and landing?

U06
1- Flaps decrease lift which increases the stall speed.
2- Flaps provide an increase in lift.
3- A steeper-than-normal approach is necessary due to the increase in stall speed.
4- The airspeed does not deteriorate as rapidly when the landing flare is started.

778. Of the following wind conditions, which would be most critical when taxiing a nosewheel equipped high-wing airplane?

U05
1- Direct headwind.
2- Direct crosswind.
3- Quartering headwind.
4- Quartering tailwind.

☆ ☆ ☆ ☆ ☆ ☆ ☆

287-484 O - 78 - 10

SECTIONAL CHART LEGEND EXCERPTS

LEGEND

CONTOUR INTERVAL
500 feet
Intermediate contours shown at 250 feet

HIGHEST TERRAIN elevation is
1719 feet
located at 43°02'N - 89°51'W

AIRPORTS

AIRPORT DATA

AIRPORTS WITH SERVICES

AIRPORTS WITH EMERGENCY OR NO SERVICES

RADIO AIDS TO NAVIGATION AND COMMUNICATION BOXES

AIRPORT TRAFFIC SERVICE AND AIRSPACE INFORMATION

AIRSPACE INFORMATION

AIRPORT TRAFFIC AREA

ADVISORY SERVICE AIRPORT

OBSTRUCTIONS

MISCELLANEOUS

TOPOGRAPHICAL INFORMATION

PROHIBITED, RESTRICTED, WARNING, AND ALERT AREAS
ON CHICAGO SECTIONAL CHART

NO.	NAME	ALTITUDES	TIME	ANTICIPATED ACTIVITY
R-2301	Savanna, Ill.	To 2000'	0800 to 2200	C.O., Quinton Depot, Savanna, Ill.
R-2401	Camp McCoy, Wis.	To 30,000'	Continuous	† FAA, Chicago ARTC Center or area FSS, C.O., Camp McCoy, Wis.
R-2402	Sheboygan, Wis.	To 9,999'	Continuous	† FAA, Chicago ARTC Center or area FSS, Combs, Volk Field, Wis.
R-2405	Volk Field, Wis.	To 18,000'	Continuous	† FAA, Chicago ARTC Center or area FSS, Combs, Volk Field, Wis.

P—Prohibited R—Restricted W—Warning A—Alert † Controlling Agency

ATTENTION

THIS CHART CONTAINS MAXIMUM ELEVATION FIGURES (MEF). The Maximum Elevation Figures shown in quadrangles bounded by latitude lines of latitude and longitude are represented in THOUSANDS and HUNDREDS of feet above mean sea level. The MEF is based on information available concerning the highest known feature in each quadrangle, including terrain and obstructions (trees, towers, antennas, etc.).

Example 12,900 feet 129

SECTIONAL AERONAUTICAL CHART
SCALE 1:500,000

SE

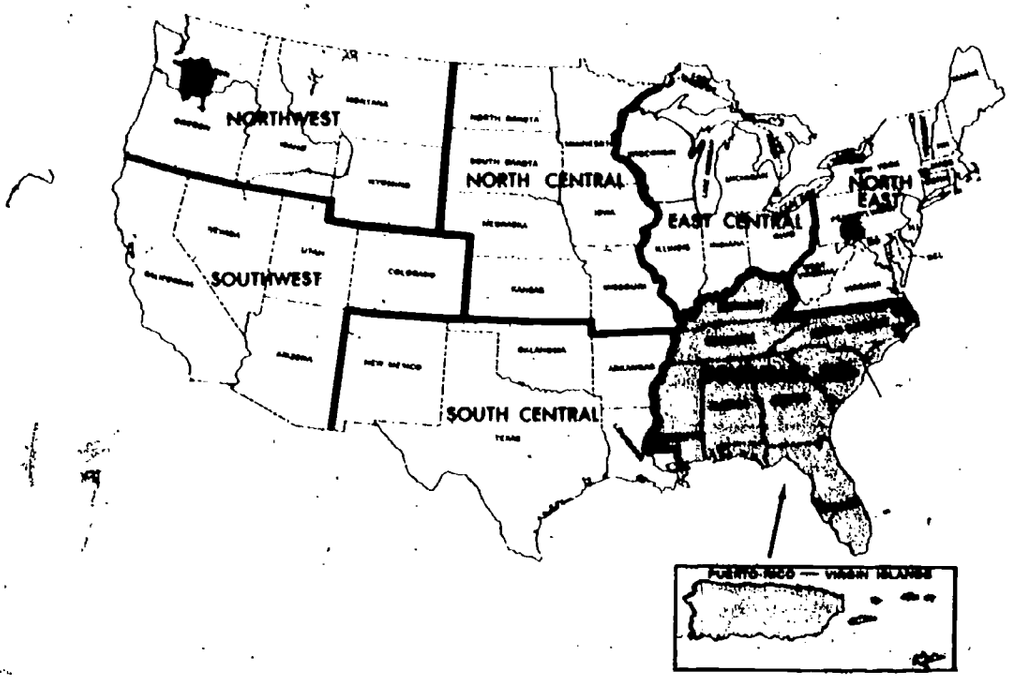
UNITED STATES GOVERNMENT
FLIGHT INFORMATION PUBLICATION

AIRPORT/FACILITY DIRECTORY

SOUTHEAST U.S.

EFFECTIVE 0901Z 18 MAY
TO 0901Z 13 JUL

Consult NOTAMS for latest information



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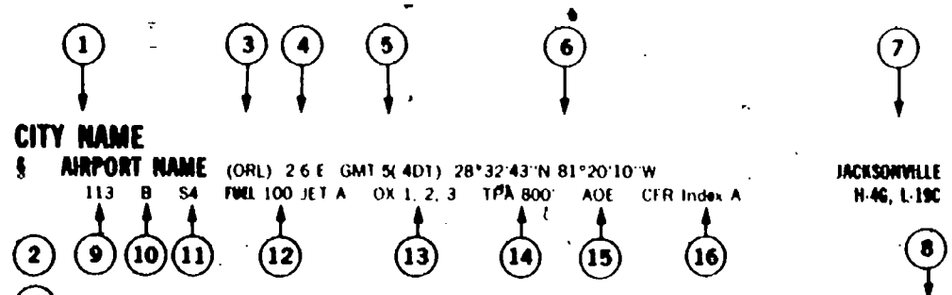
National Ocean Survey
Published in accordance with specifications and agreements approved by the Federal Aviation Administration and the Department of Commerce

DIRECTORY LEGEND
SAMPLE



CITY NAME

§ **AIRPORT NAME** (ORL) 2 6 E GMT 5(4DT) 28°32'43"N 81°20'10"W — JACKSONVILLE
113 B S4 FUEL 100 JET A OX 1, 2, 3 TPA 800' AOE CFR Index A — H-4G, L-19C

IAP

RWY 07-25: H6000X150 (ASPH) S-90, D-160, DT-300 HIRL
RWY 07: ALSF1 Trees 1700' from thld RWY 25: REIL Rgt tfc
RWY 13-31: H4620X100 (ASPH) HIRL
RWY 13: VASI Pole 600' from thld 385' ovrn RWY 31: VASI Rgt tfc 569' ovrn Brush 200' from thld
AIRPORT REMARKS: Acft 100,000 lbs or over ctc Director of Aviation for approval (305) 894-9831 Fee for all airline charters, travel clubs and certain revenue producing acft
COMMUNICATIONS: ATIS 127.25 UNICOM 123.0
NAME FSS (ORL) on fld 123.65 122.65 122.2 122 1R 112 2T (305) 894-0861
(R) NAME APP CON 124.8 (337° 179°) 120.15 (180°336°)
TOWER 118.7 GND CON 121.7 CLNC DEL 125.55
STAGE I SVC ctc ORLANDO APP CON
RADIO AIDS TO NAVIGATION: VHF/DF ctc ___ ___ FSS
NAME (H) VORTAC 112.2 ORL Chan 59 28°32'33"N 81°20'07"W at fld.
VOR unusable 050-060° beyond 5000'
ILS 109.9 I-ORL Rwy 07, LOM Henry 221 OR
ASR
COMM/NAVAID REMARKS: Tower operates 1200-0400Z‡

AIRPORT NAME (X30) 7 W GMT 5(4DT) 28°31'50"N 81°32'26"W — JACKSONVILLE
130 S4 FUEL 100 OX 2
RWY 18-36: 2430X150 (TURF) LIRL
RWY 18: Thld dsplcd 215' RWY 36: Thld dsplcd 270'
AIRPORT REMARKS: Attended dawn 0300Z‡
COMMUNICATIONS: UNICOM 122.8
NAME FSS (ORL)

---

§ **AIRPORT NAME** (MCO) 6.1 SE GMT-5(-4DT) 28°25'53"N 81°19'29"W — JACKSONVILLE
96 B FUEL 100, JET A CFR Index D — H-4G, L-19C
RWY 18R-36L: H12004X300 (CONC) S-100, D-200, DT-400 HIRL — IAP
RWY 18R: ALSF1, REIL Rgt tfc RWY 36L: ALSF1
RWY 18L-36R: H12004X200 (ASPH) S-165, D-200, DT-400 HIRL
RWY 18L: ALSF1 Thld dsplcd 990' RWY 36R: ALSF1 Rgt tfc
AIRPORT REMARKS: Attended 1200-0300Z‡. 1000' ovrns all rwys
COMMUNICATIONS: UNICOM 123.0
NAME FSS (ORL) on Herndon
(R) APP CON 124.8 (337°-179°) 120.1 (180°-336°)
TOWER 124.3 GND CON 121.85 CLNC DEL 134.7
DEP CON 124.8 (337°-179°) 120.1 (180°-336°)
STAGE III SVC ctc APP CON
RADIO AIDS TO NAVIGATION:
(H) VORTAC 112.2 ORL Chan 59 28°32'33"N 81°20'07"W 173° 5.7 NM to fld
VOR unusable 050°-060° beyond 15 NM below 5000'
ILS 109.3 I-MCO Rwy 36 BC unusable
ASR

AIRPORT NAME (See PLYMOUTH)

148

DIRECTORY LEGEND

LEGEND

This Directory is an alphabetical listing of data on record with the FAA on all airports that are open to the public, associated terminal control facilities, air route traffic control centers and radio aids to navigation within the conterminous United States, Puerto Rico and the Virgin Islands. Airports are listed alphabetically by associated city name and cross referenced by airport name. Facilities associated with an airport, but with a different name, are listed individually under their own name, as well as under the airport with which they are associated.

The listing of an airport in this directory merely indicates the airport operator's willingness to accommodate transient aircraft, and does not represent that the facility conforms with any Federal or local standards, or that it has been approved for use on the part of the general public.

The information on obstructions is taken from reports submitted to the FAA. It has not been verified in all cases. Pilots are cautioned that objects not indicated in this tabulation (or on charts) may exist which can create a hazard to flight operation.

Detailed specifics concerning services and facilities tabulated within this directory are contained in Airman's Information Manual, Basic Flight Information and ATC Procedures.

The legend items that follow explain in detail the contents of this Directory and are keyed to the circled numbers on the sample on the preceding page.

(1) CITY/AIRPORT NAME

Airports and facilities in this directory are listed alphabetically by associated city and state. Where the city name is different than the airport name the city name will appear on the line above the airport name. Airports with the same associated city name will be listed alphabetically by airport name and will be separated by a dashed rule line. All others will be separated by a solid rule line.

(2) NOTAM SERVICE

The symbol § preceding the airport name indicates NOTAM Service is provided. Notam service is available only at airports with established instrument approach procedures, or high volume VFR activity.

(3) LOCATION IDENTIFIER

A three or four character code assigned to airports. These identifiers are used by ATC in lieu of the airport name in flight plans, flight strips and other written records and computer operations.

(4) AIRPORT LOCATION

Airport location is expressed as distance and direction from the center of the associated city in nautical miles and cardinal points, i.e., 3.5 NE.

(5) TIME CONVERSION

Hours of operation of all facilities are expressed in Greenwich Mean Time (GMT) and shown as "Z" time. The directory indicates the number of hours to be subtracted from GMT to obtain local standard time and local daylight saving time GMT-5(-4DT). The symbol ‡ indicates that during periods of Daylight Saving Time effective hours will be one hour earlier than shown. In those areas where daylight saving time is not observed that (-4DT) and ‡ will not be shown.

(6) GEOGRAPHIC POSITION OF AIRPORT

(7) CHARTS

The Sectional Chart and Low and High Altitude Enroute Chart and panel on which the airport or facility is located.

(8) INSTRUMENT APPROACH PROCEDURES

IAP indicates an airport for which a prescribed (Public Use) FAA Instrument Approach Procedure has been published.

(9) ELEVATION

Elevation is given in feet above mean sea level and is the highest point on the landing surface. When elevation is sea level it will be indicated as (00). When elevation is below sea level a minus (-) sign will precede the figure.

(10) ROTATING LIGHT BEACON

B indicates rotating beacon is available. Rotating beacons operate dusk to dawn unless otherwise indicated in AIRPORT REMARKS.

(11) SERVICING

S1: Minor airframe repairs.
S2: Minor airframe and minor powerplant repairs.
S3: Major airframe and minor powerplant repairs.
S4: Major airframe and major powerplant repairs.

DIRECTORY LEGEND

(12) FUEL

FUEL

CODE	PRODUCT
80	Grade 80 gasoline (Red)
100	Grade 100 gasoline (Green)
100LL	Grade 100LL gasoline (low lead) (Blue)
115	Grade 115 gasoline
A	Jet A—Kerosene freeze point—40° C.
A1	Jet A-1—Kerosene, freeze point—50° C.
A1 +	Jet A-1—Kerosene with icing inhibitor, freeze point—50° C.
B	Jet B—Wide-cut turbine fuel, freeze point—50° C.
B +	Jet B—Wide-cut turbine fuel with icing inhibitor, freeze point—50° C

(13) OXYGEN

OX 1 High Pressure
OX 2 Low Pressure
OX 3 High Pressure—Replacement Bottles
OX 4 Low Pressure—Replacement Bottles

(14) TRAFFIC PATTERN ALTITUDE

TPA—Traffic Pattern Altitude is provided only for those airports without a 24 hour operating control tower. "Altitudes shown are Above Ground Level (AGL)"

(15) AIRPORT OF ENTRY AND LANDING RIGHTS AIRPORTS

AOE—Airport of Entry-A customs Airport of Entry where permission from U.S. Customs is not required, however, at least one hour advance notice of arrival must be furnished.

LRA—Landing Rights Airport-Applications for permission to land must be submitted in advance to U.S. Customs. At least one hour advance notice of arrival must be furnished.

NOTE: Advance notice of arrival at both an AOE and LRA airport may be included in the flight plan when filed in Canada or Mexico, if destination is an airport where flight notification service is available. This notice will also be treated as an application for permission to land in the case of an LRA. (See Customs, Immigration and Naturalization, Public Health and Agriculture Department requirements in the International Flight Information Manual for further details.)

(16) CERTIFICATED AIRPORT (FAR 139) and FAA INSPECTION

Airport serving Civil Aeronautics Board certified carriers and certified under FAR. Part 139 are indicated by the CFR Index i.e., CFR Index A, which relates to the availability of Crash, Fire, Rescue equipment.

All airports not inspected by FAA will be identified by the note: Not insp. This indicates that the airport information has been provided by the owner or operator of the field.

Airports serving Civil Aeronautics Board certified carriers and certified under FAR, Part 139, are indicated by the CFR index; i.e., CFR Index A, which relates to the availability of crash, fire, rescue equipment.

FAR—PART 139 CERTIFICATED AIRPORTS

INDICES AND FIRE FIGHTING AND RESCUE EQUIPMENT REQUIREMENTS

Airport Index	*Required No. Vehicles*	*Aircraft Length*	*Scheduled Departures*	*Agent + Water for Protein Foam*
A	1	≥90'	≤5	500#DC or 400#DC + 50 gal H²O
		>90', ≥126'	<5	300#DC + 300 gal H²O
B	2	>90', ≥126'	≤5	Index A + 1500 gal H²O
		>126', ≥160'	<5	
C	3	>126', ≥160'	≤5	Index A + 3000 gal H²O
		>160', ≥200'	<5	
D	3	>160', ≥200'	≤5	Index A + 4000 gal H²O
		>200'	<5	
E	3	>200'	≤5	Index A + 6000 gal H²O
LOA	Vehicle and capacity requirements for airports limited operating certificates are determined on a case by case basis.			

> Greater Than; < Less Than; ≤ Equal or Greater Than; ≥ Equal or Less Than; H²O—Water; DC—Dry Chemical.

NOTE: If AFFF (Aqueous Film Forming Foam) is used in lieu of Protein Foam, the water quantities listed for Indices A thru E can be reduced 33-1/3%.

(17) RUNWAY DATA

Runway information is shown on two lines. That information common to the entire runway is shown on the first line while information concerning the runway ends are shown on the second or following line. Lengthy information will be footnoted and placed in the Airport Remarks.

Runway direction, surface, length, width, weight bearing capacity, lighting, gradient (when gradient exceeds 0.3 percent) and appropriate remarks are shown for each runway. Direction, length, width, lighting and remarks are shown for seaplanes.

DIRECTORY LEGEND

RUNWAY SURFACE AND LENGTH

Runway lengths prefixed by the letter "H" indicate that the runways are hard surfaced (concrete, asphalt). If the runway length is not prefixed, the surface is sold, clay, etc. The runway surface composition is indicated in parentheses after runway length as follows

(ASPH)-Asphalt
(CONC)-Concrete
(DIRT)-Dirt
(GRVL)-Gravel, or cinders
(TURF)-Sod

The full dimensions of helipads are shown, i.e., 50X50.

RUNWAY WEIGHT BEARING CAPACITY

Runway strength data shown in this publication is derived from available information and is a realistic estimate of capability at an average level of activity. It is not intended as a maximum allowable weight or as an operating limitation. Many airport pavements are capable of supporting limited operations with gross weights of 25-50% in excess of the published figures. Permissible operating weights, insofar as runway strengths are concerned, are a matter of agreement between the owner and user. When desiring to operate into any airport at weights in excess of those published in the publication, users should contact the airport management for permission. Add 000 to figure following S, D, DT, DDT and MAX for gross weight capacity.

S—Runway weight bearing capacity for aircraft with single wheel type landing gear, (DC-3), etc.
D—Runway weight bearing capacity for aircraft with dual wheel type landing gear, (DC-6),etc
DT—Runway weight bearing capacity for aircraft with dual tandem type landing gear, (707), etc.
DDT—Runway weight bearing capacity for aircraft with double dual-tandem type landing gear, (747), etc

Quadricycle and dual tandem are considered virtually equal for runway weight bearing consideration, as are single tandem and dual-wheel

Omission of weight bearing capacity indicates information unknown.

RUNWAY LIGHTING

Lights are in operation sunset to sunrise. Lighting available by prior arrangement only or operating part of the night only and/or pilot controlled and with specific operating hours are indicated under airport remarks as footnotes. Since obstructions are usually lighted, obstruction lighting is not included in this code. Unlighted obstructions on or surrounding an airport will be noted in airport remarks.

Temporary, emergency or limited runway edge lighting such as flares, smudge pots, lanterns or portable runway lights will also be shown in airport remarks, instead of being designated by code numbers...

Types of lighting are shown with the runway or runway end they serve.

LIRL—Low Intensity Runway Lights
MIRL—Medium Intensity Runway Lights
HIRL—High Intensity Runway Lights
REIL—Runway End Identifier Lights
C/L—Centerline Lights
TDZ—Touchdown Zone Lights
ODALS—Omni Directional Approach Lighting System
USAF OVRN—Air Force Overrun 1000' Standard Approach Lighting System.
LDIN—Lead-In Lighting System.
MALS—Medium Intensity Approach Lighting System.
MALSF—Medium Intensity Approach Lighting System with Sequenced Flasher Lights.
MALSR—Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights.
SALS—Short Approach Lighting System
SALSF—Short Approach Lighting System with Sequenced Flashing Lights.
SSALS—Simplified Short Approach Lighting System.
SSALF—Simplified Short Approach Lighting System with Sequenced Flashing Lights.
SSALR—Simplified Short Approach Lighting System with Runway Alignment Indicator Lights.
ALSF1—High Intensity Approach Lighting System with Sequenced Flashing Lights, Category I, Configuration.
ALSF2—High Intensity Approach Lighting System with Sequenced Flashing Lights, Category II, Configuration.
VASI—Visual Approach Slope Indicator Systems

VASI approach slope angle and TCH will be shown only when slope angle exceeds 3°.

RUNWAY GRADIENT

Runway gradient will be shown only when it is 0.3 percent or more. When available the direction of slope upward will be indicated, i.e., 0.5% up NW.

RUNWAY END DATA

Lighting systems such as VASI, MALSR, REIL; obstructions; displaced thresholds will be shown on the specific runway end. "Rgt tfc"-Right traffic indicates right turns should be made on landing and takeoff for specified runway end.

(18) AIRPORT REMARKS

"Landing 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.

Obstructions—Because of space limitations only the more prominent obstacles are indicated. Natural obstruction, such as trees, clearly discernible for contact operations are not included. On the other hand, all obstructions within at least a 20:1 approach ratio are indicated.

Remarks—Data is confined to operational items affecting the status and usability of the airport.

(19) COMMUNICATIONS

Communications will be listed in sequence in the order shown below:

Automatic Terminal Information Service (ATIS) and Private Aeronautical Stations (UNICOM) along with their frequency is shown, where available, on the line following the heading "COMMUNICATIONS".

Flight Service Station (FSS) information. The associated FSS will be shown followed by the identifier and information concerning availability of telephone service, e.g. Direct Line (DL). Local Call (LC), etc. Where the airport NOTAM File identifier is different then the associated FSS it will be shown as "NOTAM File DCA". Where the FSS is located

DIRECTORY LEGEND

on the field it will be indicated as "on arpt" following the identifier. Frequencies available will follow. The FSS telephone number will follow along with any significant operational information. FSS's whose name is not the same as the airport on which located will also be listed in the normal alphabetical name listing for the state in which located. Limited Remote Communication Outlet (LRCO) or Remote Communications Outlet (RCO) providing service to the airport followed by the frequency and name of the Controlling FSS.

FSS's and CS/T's provide information on airport conditions, radio aids and other facilities, and process flight plans. Airport Advisory Service is provided at the pilot's request on 123.6 or 123.65 by FSS's located at non-tower airports or when the tower is not in operation. (See AIM Part 1, ADVISORIES AT NON TOWER AIRPORTS.)

Aviation weather briefing service is provided by FSS's and CS/T's; however, CS/T personnel are not certified weather briefers and therefore provide only factual data from weather reports and forecasts. Flight and weather briefing services are also available by calling the telephone numbers listed.

Limited Remote Communications Outlet (LRCO)—Unmanned satellite air/ground communications facility, which may be associated with a VOR. These outlets effectively extend service range of the FSS and provide greater communications reliability.

Remote Communications Outlet (RCO)—An unmanned satellite air to ground communication stations remotely controlled and providing UHF and VHF communications capability to extend the service range of an FSS.

Civil communications frequencies used in the FSS air/ground system are now operated simplex on 122.0, 122.2, 122.3, 122.4, 122.6, 123.6; emergency 121.5; plus receive-only on 122.05, 122.1, 122.15 and 123.6.

a. 122.0 is assigned as the Enroute Flight Advisory Service channel at selected FSS's.

b. 122.2 is assigned to all FSS's as a common enroute simplex service.

c. 123.6 is assigned as the airport advisory channel at non-tower FSS locations, however, it is still in commission at some FSS's collocated with towers to provide part-time Airport Advisory Service.

d. 122.1 is the primary receive-only frequency at VORs. 122.05, 122.15 and 123.6 are assigned at selected VORs meeting certain criteria.

e. Some FSS's are assigned 50kHz channels for simplex operation in the 122-123 MHz band (e.g. 122.35). Pilots using the FSS A/G system should refer to this directory or appropriate charts to determine frequencies available at the FSS or remoted facility through which they wish to communicate.

Part time FSS hours of operation are shown in remarks under facility name.

Emergency frequency 121.5 is available at all Flight Service Stations, Towers, Approach Control and RADAR facilities, unless indicated as not available.

TERMINAL SERVICES

ATIS—A continuous broadcast of recorded non-control information in selected areas of high activity.

UNICOM—A non-government air/ground radio communications facility utilized to provide general airport advisory service.

APP CON—Approach Control. The symbol (R) indicates radar approach control.

TOWER—Control tower

GND CON—Ground Control

DEP CON—Departure Control. The symbol (R) indicates radar departure control.

CLNC DEL—Clearance Delivery.

VFR ADVSY SVC—VFR Advisory Service. Service provided by Non-Radar Approach Control.

STAGE I SVC—Radar Advisory Service for VFR aircraft

STAGE II SVC—Radar Advisory and Sequencing Service for VFR aircraft

STAGE III SVC—Radar Sequencing and Separation Service for participating VFR Aircraft within a Terminal Radar Service Area (TRSA)

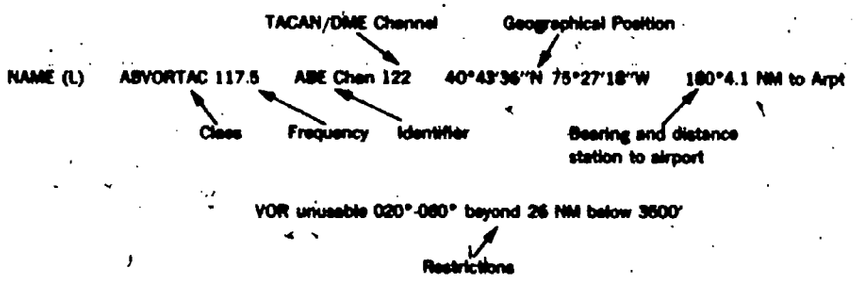
TCA—Radar Sequencing and Separation Service for all aircraft in a Terminal Control Area (TCA)

(20) RADIO AIDS TO NAVIGATION

The Airport/Facility Directory lists by facility name all Radio Aids to Navigation in the National Airspace System and those upon which the FAA has approved an instrument approach. Private or military Radio Aids to Navigation not in the National Airspace System are not tabulated.

All VOR, VORTAC and ILS equipment in the National Airspace System has an automatic monitoring and shutdown feature in the event of malfunction. Unmonitored as used in the publication means that FSS or tower personnel cannot observe the malfunction or shutdown signal.

NAVAID information is tabulated as indicated in the following sample:



MIR—Indicates that civil radar instrument approach minimums are published.

DIRECTORY LEGEND

RADIO CLASS DESIGNATIONS

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

Normal Usable Altitudes and Radius Distances

Class	Altitudes	Distance (miles)
(T)	12,000' and below	25
(L)	Below 18,000'	40
(H)	Below 18,000'	40
(H)	Within the Conterminous 48 States only, between 14,500' and 17,999'	100
(H)	18,000' FL 450	130
(H)	Above FL 450	100

(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	Automatic Weather Broadcast (also shown with • following frequency.)
B	Scheduled Broadcast Station (broadcasts weather at 15 minutes after the hour.)
DF	Direction Finding Service.
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, where available, on localizer channel)
LDA	Localizer Directional Aid.
LMM	Compass locator station when installed at middle marker site.
LOM	Compass locator station when installed at outer marker site.
MH	Non-directional radio beacon (homing) power less than 50 watts.
S	Simultaneous range homing signal and/or voice.
SABH	Non-directional radio beacon not authorized for IFR or ATC. Provides automatic weather broadcasts.
SDF	Simplified Direction Facility.
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	Without voice on radio facility frequency.
Z	VHF station on location marker at a LF radio facility.

(21) COMM/NAVAID REMARKS:

Pertinent remarks concerning communications and NAVAIDS.

DIRECTORY LEGEND

ABBREVIATIONS

The following abbreviations are those commonly used within this Directory. Other abbreviations may be found in the Legend and are not duplicated below.

acft	aircraft	ldg	landing
apch	approach	med	medium
arpt	airport	ngt	night
avbl	available	ntc	notice
bcn	beacon	opr	operate
blo	below	ops	operates operation
byd	beyond	ovrn	overrun
ctc	contact	p-line	power line
dalgt	daylight	req	request
dsplc	displace	rqr	requires
dsplcd	displaced	rgt tfc	right traffic
emerg	emergency	rwy	runway
fld	field	svc	service
ints	intensity	tkf	take off
lgtd	lighted	tfc	traffic
lgts	lights	thld	threshold

ABBREVIATIONS

NOTICES TO AIRMEN
EXCERPT

Note: "s" may be added for plural, or as appropriate.

A

AAS..... Airport Advisory Service
A/C..... Approach Control
acft..... aircraft
Ad Cus.. Advise Customs
ADF..... Automatic Direction Finder
AGL..... above ground level
AID..... Airport Information Desk
AIM..... Airman's Information Manual
ALS..... Approach light system
apch..... approach
apchg... approaching
aprx..... approximate
arpt..... airport
ARSR.... Air Route Surveillance Radar
ARTCC... Air Route Traffic Control Center
ASDE.... airport surface detection equipment
ASR..... Arpt Surveillance Radar
ATC..... air traffic control
ATCT.... air traffic control tower
ATIS..... Automatic Terminal Information Service
avbl..... available
awy..... airway

B

BC..... back course
bcn..... beacon
bcst..... broadcast
bldg..... building
brg..... bearing
btn..... between

C

CFR..... crash fire rescue
clsd..... closed
cmsnd... commissioned
cntr..... center
cntrln.... centerline
Comlo... Compass locator
const.... construction
CS/T.... combined station/tower
ctc..... contact
CTLZ.... Control Zone

D

dalgt.... daylight
dcmsnd.. decommissioned
degs..... degrees
DF..... direction finder
DME.... UHF standard (TACAN compatible) distance measuring equipment
dsplcd .. displaced
durg..... during
DVFR.... Defense Visual Flight Rule

E

E..... east
elev..... elevation
emerg... emergency
equip.... equipment

F

FL..... Flight Level
FM..... fan marker
freq..... frequency
FSS..... Flight Service Station

G

GS..... glide slope
GWT.... gross weight

H

HIRL.... High intensity Runway Lights
hwy..... highway

I

ident..... identification
IFR..... Instrument Flight Rules
IFSS..... International Flight Service Station
ILS..... instrument landing system
info..... information
intl..... international
ISMLS... Interim Standard Microwave Landing System

J

J-bar.... jet runway barrier

K

kHz..... kilohertz

L

lat..... latitude
lctd..... located
LDA..... Localizer type directional aid
lgts..... lights
lgtd..... lighted
LMM.... compass locator at middle marker ILS
ldng..... landing
loc..... localizer
LOM.... compass locator at outer marker ILS
long .... longitude
LRCO.... Limited Remote Communications Outlet

M

MAA.... maximum authorized altitude
mag..... magnetic
maint ... maintain, maintenance
MALS... Medium Intensity Approach Light System
MALSR.. Medium Intensity Simplified Short Approach Light System with Rail
max..... maximum
MCA.... minimum crossing altitude
MEA.... minimum en route IFR altitude
MHz.... megahertz
min..... minimum or minute
MIRL.... Medium Intensity Runway Edge Lights
MM..... middle marker ILS
MOCA... minimum obstruction clearance altitude
MRA..... minimum reception altitude
MSL..... mean sea level
muni.... municipal

N

N..... north
natl..... national
navaid... navigational aid
NDB..... Non-directional rdo bcn
ngt..... night
NM..... nautical mile(s)
Nr..... number

O

obstn.... obstruction
OM..... outer marker ILS
oper..... operate
opn..... operation
OTS..... Out of Service
ovrn..... overrun

P

PAR..... Precision Apch Radar
permly permanently

Q

quad... quadrant

R

RAIL.... Runway Alignment Indicator Lights
RAPCON. radar approach control (USAF)
RCAG... Remote Center air/ground
RCLS.... Runway Centerline Lights System
RCO..... Remote Communications Outlet
rcv..... receive
rcvg..... receiving
rcvr..... receiver
REIL..... Runway End Identifier Lights
req..... request
rqrd..... required
rgt..... right
RRP..... Runway Reference Point
ruf..... rough
RVR..... runway visual range
RVRC.... Runway Visual Range Center
RVRT.... Runway Visual Range Touchdown
RVRR.... Runway Visual Range Rollout
RVV..... runway visibility values
RWY.... Runway

S

S..... south
SDF..... Simplified Directional Facility
sfc..... surface
SID..... Standard Instrument Departure
SM..... statute mile(s)
SR..... sunrise
SS..... sunset
STAR.... Standard Terminal Arrival Route
STOL.... Short take-off & landing rnwy
svc..... service

T

T..... true (after a bearing)
TACAN UHF navigational facility—omni-directional course and distance information
TCA..... Terminal Control Area
TCH..... Threshold Crossing Height
tfc..... traffic
thr..... threshold
tkof..... take off
tmprly... temporarily
tmpry.... temporary
TPA..... Traffic Pattern Altitude
TRACON. Terminal Radar approach control
TRSA.... Terminal Radar Service Area
tsmt..... transmit
tsmtg.... transmitting
tsmtr.... transmitter
TV..... television
TWEB.... transcribed weather bcst
twy..... taxiway

U

UHF..... Ultra high frequency
unavbl... unavailable
unctld... uncontrolled
unlgtd... unlighted

V

VASI.... Visual Approach Slope Indicator
VFR..... visual flight rules
VGS..... Visual Guidance System
VHF..... Very high frequency
VOR.... VHF Omni-Directional Radio Range
VORTAC. Combined VOR and TACAN System
VOT..... a VOR Receiver testing facility
vsby..... visibility

W

W..... west
WS..... Weather Service
wt..... weight

Z

Z..... Greenwich mean time

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