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AC NO: AC 65.95-2A

DATE: 4/15/69

Repl. by 2B



# ADVISORY CIRCULAR

HANDBOOK AND STUDY GUIDE FOR AVIATION

MECHANICS INSPECTION AUTHORIZATION

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DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

AC NO: AC 65.95-2A

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## DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

**SUBJECT:** HANDBOOK AND STUDY GUIDE FOR AVIATION MECHANICS  
INSPECTION AUTHORIZATION

1. PURPOSE. This handbook gives guidance to persons conducting annual and progressive inspections and approving major repairs or alterations of aircraft. It also stresses the important role they have in air safety. While the handbook is primarily intended for mechanics holding or preparing for an Inspection Authorization, it may be useful to aircraft manufacturers and certificated repair stations who have these privileges.
2. CANCELLATION. AC 65.95-2 dated May 3, 1967, is canceled.
3. REFERENCES. Part 65 of the Federal Aviation Regulations sets forth the privileges of mechanics holding an Inspection Authorization. Part 43 of the FARs sets forth maintenance rules and standards of performance.
4. HOW TO GET THIS HANDBOOK.
  - a. Order from: Department of Transportation; Federal Aviation Administration; Distribution Unit, TAD-484.3; Washington, D.C. 20590
  - b. Identify this publication in your order as: FAA AC No. 65.95-2A Handbook and Study Guide for Aviation Mechanics' Inspection Authorization dated 4/15/69.
  - c. This publication will be furnished free of charge.

  
Director,  
Flight Standards Service

Initiated by: FS-340

CHAPTER 1. ISSUANCE, RENEWAL, AND CHANGE OF FIXED BASE

1. ISSUANCE. Section 65.91 of the FAR sets forth the issuance rules for an Inspection Authorization.

- a. Apply for the Inspection Authorization at the nearest FAA General Aviation District Office. Applicants outside the United States should apply to the International Field Office. Tests are given by appointment only and usually take a minimum of five hours.
- b. The applicant is required to provide all the reference material needed for the test. A list of the publications needed and where to obtain them is given in Appendix 1 of this handbook.
- c. Applicants who are employed full time in aviation maintenance under the Federal Aviation Regulations will be considered to have been actively engaged. Those working part time should be evaluated by the Inspector to whom they apply.
- d. An AI needs a fixed base where he can be contacted for FAA administrative purposes. A list of AIs and their locations is made available for people who might need an AI's services.
- e. The AI needs equipment, facilities, and data to help him do a good job. Our modern, complex aircraft require maintenance to be done "by the book" and the use of special tools or equipment to do the work accurately and efficiently.
- f. The written test is designed to test your ability to inspect an aircraft, and how to approve major repairs and alterations. You should know how to use reference indexes to be able to locate specific information quickly:
  - (1) Part 1 of the test consists of 10 questions and has a time limit of 20 minutes. It is based on the issuance, privileges, and limitations of the Inspection Authorization. Use of reference material is not permitted during this part of the test.
  - (2) Parts 2 and 3 consist of 20 questions each and have a time limit of two hours for each part. They cover situations you would likely encounter while doing annual and progressive inspections and approving major repairs and alterations. Some questions relate to a specific aircraft that is assigned by the test monitor. You will be expected to use or be familiar with the following:
    - (a) FARs pertaining to maintenance and airworthiness certification.
    - (b) Specifications: Aircraft, engine, and propeller.
    - (c) Type certificate data sheets.

- (d) Procedures for conducting annual and progressive inspections.
- (e) Rules pertaining to the Inspection Authorization; issuance, privileges, and limitations.
- (f) Airworthiness Directives.

2. RENEWAL. All Inspection Authorizations expire on March 31 of each year. For renewal you should be prepared to show that you have had the activity required in FAR 65.93.

a. Renewals usually are done in conjunction with a safety meeting designed to help the AI with his work. These usually include:

- (1) Discussion of maintenance problems of a general nature.
- (2) Discussion of recent regulation changes and how they affect the AI.
- (3) When available, manufacturers of aviation products hold service clinics, etc., to acquaint an AI with current or new equipment and service problems.

b. If you are unable to attend these meeting or if none is held in your area you should arrange with your local FAA office for renewal during the month of March.

3. CHANGE OF FIXED BASE. Change of address of a fixed base of operations by an AI requires that the FAA be given written notice prior to exercising his privileges at the new address.

CHAPTER 2. SUGGESTIONS FOR DEVELOPING GOOD OWNER/AI RELATIONS

4. GET IT STRAIGHT. Misunderstandings usually result from a lack of clear communication. Be sure to come to a mutual agreement with an owner as to just what is to be done. Attention to the following details will usually avoid the ill-will a later disagreement may generate:
  - a. Itemize the work on a work order or in some manner that will provide a clear understanding of the work to be done.
  - b. Establish a firm understanding about the cost or range of cost anticipated for the job.
  - c. If an annual inspection is involved, point out that certain maintenance is required to perform the inspection, such as:
    - (1) Removal of cowling, inspection plates, fairing, upholstering, etc.
    - (2) Aircraft and engine to be cleaned.
    - (3) Disassembly of wheels and other components to determine their condition.
  - d. Advise the owner that an annual inspection involves determination of compliance with aircraft specifications and airworthiness directives.
  - e. Agree as to whether routine servicing is to be included as part of the inspection or is to be performed separately. Such servicing may not be a part of the inspection, but may be conveniently done while conducting the inspection. Such items might be:
    - (1) Cleaning spark plugs.
    - (2) Servicing landing gear oleos.
    - (3) Changing oil.
    - (4) Minor adjustments.
    - (5) Servicing the brakes.
    - (6) Dressing propeller blade nicks.
    - (7) Lubrication.
    - (8) Stop drilling small cracks and minor patching of cowling and baffles.

- f. Make a written list of all discrepancies found on the aircraft indicating if and how corrected. The owner may want a copy of this list.
- g. Discrepancies not corrected that result in the aircraft being reported as "unairworthy" must be listed in duplicate with the original going to the owner and the copy to FAA. The owner should understand that the aircraft is not eligible to be operated without a special authorization until the discrepancies are corrected.
- h. Establish a reasonable time period to accomplish the inspection.
- i. Request the owner to supply the complete aircraft records for review and entries. Point out that this is necessary to properly conduct an annual inspection.
- j. Complete the inspection as soon as practicable. Often an aircraft will sit around the shops waiting for parts, etc., even though the inspection as such was actually finished. In these cases it is advisable to officially report the aircraft unairworthy. (Ref: FAR 43.11(a)(5).) When the parts arrive, the repairs can be completed and the aircraft returned to service in the usual manner. Very often this time lapse represents several weeks, or even months, during which many things can deteriorate on the aircraft. Also, there is always the chance that an AD involving some part of the aircraft may have been issued in the interim. In these cases, it might be unwise to complete the repairs originally intended and sign the aircraft off as "airworthy" without doing another complete inspection.
- k. Complete the aircraft record entries as required by sections 43.9 and 43.11 of the FARs. Make adequate descriptions of repairs or alterations if accomplished along with your inspection. It is not necessary to record preventive maintenance; however, anything defined as a repair or alteration should be entered.
- l. Record compliance with all Airworthiness Directives actually accomplished. Provide sufficient information so that the owner has that required of him by FAR 91.173(b)(2). A general statement such as "All ADs complied with" is NOT an adequate entry and should be avoided. Many owners keep a separate record of AD compliance in the back of the logbook or a specially provided section. This is a good place to identify those ADs of a recurring nature and when the next compliance is due. See Figures 1 & 2, for typical entries.
- m. When approving repairs and alterations, if possible, be available as work progresses on major jobs. This way you can see affected areas and structures better than after completion of the entire job. In many cases the workmanship during the progress of the job can be improved much more easily than having to do it over later.

February 9, 1966. Total time 445 hours. Complied with AD 64-27-2 by installing new rubber float, and new bowl cover screws. Inspected solder on float valve bracket and found okay. Stamped -64 on nameplate.

*George B. Jones*

George B. Jones IA 272182

FIGURE 1.

Typical entry for compliance with an Airworthiness Directive with one-time compliance.

February 9, 1966. Total time 352 hours. Complied with AD 61-23-1 paragraphs a(1) and a(2) by tapping and magnifying glass. No cracks found. Void on top of blade #2, B2-248-53A, S/N 123, is 2" long and extends from 25" to 27" outboard of blade butt rib. Next inspection due at 377 hours.

*George B. Jones*

George B. Jones IA 272182

FIGURE 2.

Typical entry for compliance with an Airworthiness Directive with recurring inspection.

## CHAPTER 3. BASIC FUNCTIONS OF THE AI

5. GENERAL. The basic functions of the AI are set forth in section 65.95 of the FAR. This section permits an AI to approve major repairs and major alterations, conduct annual inspections, and to perform or supervise progressive inspections in accordance with the standards and procedures set forth in FAR 43.
- a. The AI may not approve major repairs or major alterations on any aircraft maintained in accordance with a continuous airworthiness program under Part 121 or 127 of the FARs.
  - b. The AI is permitted to perform one other function set forth in section 21.183(d) of FAR 21. This section permits AIs to perform an airworthiness inspection on single-engine airplanes, prior to issuance of an airworthiness certificate. The scope of the inspection is comparable to the 100-hour inspection.
6. APPROVING MAJOR REPAIRS AND ALTERATIONS. The AI's primary responsibility is to determine airworthiness by inspecting for compliance with pertinent Airworthiness Directives (ADs) and Aircraft Specifications or Data Sheets; that repairs or alterations conform to approved data, and the aircraft is in a condition for safe operation.
- a. The AI should conduct this inspection himself as the regulations do not provide for delegation of this responsibility.
  - b. The approval should not be taken lightly as a paper signoff. It should consist of a detailed investigation to determine the material used, quality of workmanship, compliance with approved data, completeness, and possible effect on other structures or systems. The finished product should be at least equal to its original or properly altered condition.
  - c. The approval of alterations by AIs is often a misunderstood term. The AI cannot approve the DATA for major alterations. He may, however, inspect to see that the alteration conforms to data PREVIOUSLY APPROVED BY THE ADMINISTRATOR. (FAR 65.95.) This means the AI must assure that data is available as a basis for approval. Preferably, this should be prior to beginning the repair or alteration. If data is not available, or you are not sure that the data you have is acceptable, discuss it with your local FAA inspector. The inspector may be able to:



- (1) Establish an acceptable approval basis, or
  - (2) Approve the data himself, or
  - (3) Recommend application for a Supplemental Type Certificate (STC) as the circumstances warrant.
- d. Quite often repairs are performed that are eventually covered by fabric, metal skin, or other structure. AIs should have all access needed to make a valid determination of compliance with the approved data. The commonly accepted practice for repairs that are to be covered allows the AI to inspect before the repair is obscured and to make an entry to this effect on the reverse of the FAA Form 337. An example of this appears as Figure 3. When the repair is completed, the final inspecting AI can determine that the inaccessible portions of the repair were done in accordance with FAA approved methods and have been properly inspected.
- e. Minor deviation from approved data is permissible IF the change is one that could be approved as a minor alteration when considered by itself. Be sure to list the deviations when completing the aircraft records. When in doubt, contact the local FAA inspector. He may decide the change is not minor and would need specific approval or amendment of the original approval.
- f. Approved data to be used as a basis for approval of repairs and alterations may be one or more of the following:
- (1) FAA Publications. FARs, Aircraft Specifications, Type Certificate Data Sheets, Advisory Circulars, etc.
  - (2) Supplemental Type Certificates. A summary is available that lists those STCs which the holders have said will be made available to the public. See Appendix 1.
  - (3) Parts Manufacturing Approval. Identifies FAA-approved replacement parts.
  - (4) Technical Standard Orders. Conformity to TSOs indicates FAA approval of materials and appliances.
  - (5) Airworthiness Directives. FAA-approved data for mandatory action concerning deficiencies found in service.
  - (6) Manufacturer's Instructions, Kits, and Service Handbooks. Such instructions must bear indication of being FAA-approved when pertaining to major alterations.

**NOTICE**

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

B. DESCRIPTION OF WORK ACCOMPLISHED (If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

1. Removed right wing from aircraft and removed skin from outer 6 feet. Repaired buckled spar 49" from tip in accordance with Figure 8 in the manufacturer's structural repair handbook #18-1.

DATE: January 5, 1966, inspected splice in item 1 and found it to be in accordance with data indicated. Splice is okay to cover.

*George B. Jones*

George B. Jones, IA 272182

2. Primed interior wing structure and replaced skin P/Ns 63-0085, 63-0086, 63-0087R with same material, 2024T3, .025" thick. Rivet size and spacing all the same as original and using procedures in Section 3 of AC 43.13-1, dated 1965.
3. Replaced stringers as required and installed 6 splices as per figure 10 in handbook #18-1.
4. Installed wing, rigged aileron, and operationally checked in accordance with maintenance manual.
5. No change in weight or balance.

END

☐ ADDITIONAL SHEETS ARE ATTACHED

FAA AC 65-95-2A

FIGURE 3.

Reverse of FAA Form 337 showing typical entries. Note the specific references in identifying FAA approved or acceptable data. Also note the entry regarding inspection of the repair by an AI prior to the cover being applied.

- (7) FAA Forms 337 dated prior to August 25, 1955, indicating that some person has obtained previous FAA engineering approval for the alteration. All FAA Form 337s being utilized as the approval basis, must contain sufficient information to provide for exact duplication of the alteration. After August 25, 1955, the FAA instituted the issuance of STCs for major type design changes.
  - (8) FAA field approval. This is usually an alteration that is to be performed on one airplane only or for limited duplication. Such approval carries limitations for its use as an approval basis for the same alteration to other aircraft. See your local FAA inspector for these approvals.
- g. The AI's role in inspecting repairs or alterations consists of these basic operations:
- (1) Determine that the repair or alteration data has FAA approval.
  - (2) Inspect to determine that it conforms to the approved data in configuration and workmanship standards. At the same time the aircraft should still comply with applicable airworthiness requirements and the repair or alteration should be compatible with all other installations.
  - (3) All operating limitations affected by an alteration should be appropriately revised. Sometimes these are in the form of flight manual supplements, instrument range markings, placards, or combinations of these.
  - (4) Aircraft record entries should be completed and the weight and balance data revised when appropriate. There should be a statement on the FAA Form 337 to the effect that weight and balance data has been revised. When an alteration results in a change in the center of gravity position, the affected c.g. limit should be investigated under adverse loading conditions unless it falls within an approved empty c.g. range. For instance, if the c.g. has shifted aft, the aft loading conditions should be computed to see that the aircraft does not exceed the aft c.g. limit. While the pilot is legally responsible for having his aircraft correctly loaded, it is the AI's responsibility when he approves an alteration to see that weight and balance data is revised and is reasonably accurate. The aircraft record entries may refer to the FAA Form 337 for details such as: "Installed exhaust augmentor kit in accordance with STC SA 453 CE, drawing number 5084 dated 5/19/65. See FAA Form 337 this date for details."
  - (5) Indicate approval on FAA Form 337, disposing of both copies in accordance with appendix b of FAR 43.

7. ANNUAL AND PROGRESSIVE INSPECTIONS. The procedures and scope of these inspections are set forth in Appendix D of Federal Aviation Regulation Part 43 and should be followed in detail. There are additional requirements listed in FAR 43.15. The regulations speak of 100-hour and annual inspections as being of identical scope; the only difference between the two is the persons authorized to perform them. Record entries you make are very important as they are the only evidence an aircraft owner has to show that he has complied with the inspection requirements of FAR 91.169 or 91.171. The following list should be helpful in reminding the AI of areas his responsibilities cover in determining that the aircraft complies with all airworthiness requirements (Ref: FAR 43.15(a)):

a. Configuration. The aircraft should conform to the aircraft specification or type certificate data sheet. When the aircraft does not conform, use the "unairworthy" procedures of FAR 43.11(a)(5).

- (1) Alterations to the product may have changed some of the operating limitations.
- (2) Unrecorded alterations or repairs may have been made. A remedial course of action may warrant the following:
  - (a) Contact owner for pertinent information.
  - (b) With owner's consent, wire FAA in Oklahoma for information.
  - (c) If approved data is available, conduct inspection and personally approve.
  - (d) Contact local FAA inspector for assistance.
- (3) The aircraft specification or data sheet indicates when a flight manual is required. It also identifies limitations which must be displayed in the form of markings and placards.
- (4) The type certificate data sheets on later models of aircraft do not contain the lists of equipment approved for a particular aircraft as did the older aircraft specifications. This list of required and optional manufacturer's approved equipment can now be found in the original equipment list furnished with the aircraft. Sometimes a later issue of the list is needed to cover recently approved items.

b. Condition. Using the checklist in FAR 43, Appendix D, the manufacturer's inspection sheets, or one of your own design, that includes the items listed in Appendix D, check the condition of the entire aircraft. This includes checks of the various systems as called for in FAR 43.15.

- (1) Routine servicing is NOT a part of the annual inspection. The inspection itself is essentially a visual evaluation of the condition of the aircraft and its components and certain

operational checks. The manufacturer may recommend certain services to be performed at various operating intervals. These can often conveniently be done at this time, and in fact should be, but should not be considered as being the inspection itself.

- (2) It is very important to be familiar with the service manuals, bulletins, letters, etc., for the product being inspected. It makes good sense to utilize the experience other people have had on similar products, so use these publications to avoid overlooking problem areas which might not otherwise come to your attention.
- (3) The FAA General Aviation Inspection Aids are also a source of service experience available to you. These Aids are summaries of difficulties reported to FAA on FAA Form 1226, Malfunction or Defect Report.
- (4) At the time he certifies the inspection for an aircraft as airworthy, the AI will be held responsible for condition of the aircraft AS OF THE TIME OF THAT CERTIFICATION.

c. Airworthiness Directives. The AI should make it a point to see whether all applicable airworthiness directives have actually been complied with on the aircraft, the powerplant, propeller, instruments, and appliances.

- (1) If the maintenance records indicate compliance with an AD, the AI should make a reasonable attempt to verify this. He would not be expected to disassemble major components such as cylinders or crankcases, etc. The reason for this being that it is not uncommon for a component to have an AD complied with and properly recorded and then later be replaced by another on which the AD had not yet been accomplished.
- (2) When the records do NOT contain indications of previous compliance, the AI should do whatever disassembly is necessary to verify the actual condition.
- (3) Often an AD calls for an inspection at one time with a modification required at a later date. On these it is very important to identify the portion of the AD complied with and the exact method of compliance.
- (4) Section 91.173(b)(2) of the FAR requires an owner to keep a chronological listing of compliance with service bulletins, and airworthiness directives, and the method of compliance. As a vital part of the services an AI performs, he can provide the information the owner is expected to keep.

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- (5) The owner should also be informed if there are subsequent requirements of an AD or that some may require reinspection at certain operating intervals other than at annual inspections. Often these are at 100-hour intervals and will be due whether or not the aircraft is legally required to have 100-hour inspections.
  - (6) To assist an AI in keeping his reference material current, we recommend that he add the new ADs to the space provided in the index of the AD summary.
- d. AIs are encouraged to report all malfunctions or defects that come to their attention. Report forms, FAA Form 1226, are available from all FAA district offices, are easy to fill out, and need no postage. See Figure 4. Prompt reporting will contribute much toward improving air safety by helping correct unsafe conditions.
- e. Paperwork Review. The owner/operator is responsible for maintaining the equipment list, center of gravity, weight distribution, and loading schedules if necessary.
- (1) The AI should determine that the placards and documents set forth in the aircraft specification or data sheet are available and current. The aircraft is not to be reported as "unairworthy" if these placards and documents are not available, but the owner/operator should be informed that under FAR 91.31 the aircraft should not be operated until they are available.
  - (2) The AI should refer to the registration and airworthiness certificates for the owner's name and address and for the aircraft make, model, registration, and serial numbers needed for reporting purposes. Be sure not to use the manufacturer's trade names as these do not always coincide with the actual model designation (Cessna Skylane is 182, Piper Comanche is PA-24-250, etc.). Here again, if these certificates are not available, the aircraft is not to be reported as unairworthy. The owner/operator should be informed that the documents must be in the aircraft with the airworthiness certificate displayed as required in FAR 91.27 WHEN THE AIRCRAFT IS OPERATED.
  - (3) Other documents often needed but not a part of the airworthiness requirements might be state registration, FCC radio station licenses, etc. The owner/operator is responsible for the proper display of these documents. However, the AI will be performing an appreciated service when he informs the operator of any deficiencies in the display and carriage of these documents.

FEDERAL AVIATION AGENCY		Budget Bureau No. 04-8003		MALFUNCTION OR DEFECT REPORT	
1. COMPLETE ALL ITEMS	AIRCRAFT		ENGINE	PROPELLER	SPECIFIC PART WHICH CAUSED DIFFICULTY
	NAME AND MODEL	Flimor 2B	O & A 275	Skyflite 80x	NAME OF PART AND PART NO
	SERIAL NO	947	AS 3-15 19	9504 - 16	Elev. Pulley Guard
	REGISTRATION NO. N-	0000P			6-149
2. IDENTIFY THE MALFUNCTIONING OR DEFECTIVE PART. DESCRIBE THE MALFUNCTION OR DEFECT AND THE CIRCUMSTANCES UNDER WHICH IT OCCURRED. STATE PROBABLE CAUSE AND RECOMMENDATIONS TO PREVENT RECURRENCE.					DATE OF SUBMISSION
Stiff elevator control noted on preflight inspection.					11-29-65
Found elevator pulley guard on right side of cabin floor at rear door bent against pulley preventing it from turning.					
Probably caused by passengers stepping on pulley guard when entering and leaving cabin.					
Recommend installation of a reinforced guard that will resist bending when stepped on.					

FORM FAA-1226 (1-63) USE PREVIOUS EDITION (8330)

3. SKETCH OF MALFUNCTION OR DEFECT—OTHER COMMENTS		FEDERAL AVIATION AGENCY	
		<p>POSTAGE AND FEE PAID FEDERAL AVIATION AGENCY</p> <p>OFFICIAL BUSINESS</p> <p>TO: FEDERAL AVIATION AGENCY WZ-CADO-6 Sky Harbor Airport 2800 Sky Harbor Blvd. Phoenix, Arizona</p> <p>MAIL IMMEDIATELY—No Postage Required</p>	
REPORT SUBMITTED BY (Name and address)			
S. A. Nell			
13 Main Street			
Phoenix 2, Arizona			
<input type="checkbox"/> REPAIR STATION <input checked="" type="checkbox"/> OPERATOR <input type="checkbox"/> MECHANIC <input type="checkbox"/> FAA INSPECTOR <input type="checkbox"/> CAB INVESTIGATOR			

FIGURE 4.

The above is a typical FAA Form 1226, Malfunction or Defect Report. AIs are urged to use this form for all malfunctions or defects that cannot be attributed to poor maintenance procedures. AIs are requested to be accurate in completing the blocks on the face of the form. It is not necessary to furnish models and serial numbers when they are not pertinent. Note that there is a recommendation as to how the defect can be corrected.

Operation Limitations      Zeph-Air 63-1A   N 40023	
RPM	Do not exceed 2300
Oil temp	212° max.
Airspeed limits do not exceed:	
Level flight or climb	95 m.p.h.
Glide or dive	129 m.p.h.
Gross weight	1220 lbs.
Empty C.G.	14.4" aft of datum
Useful load	453 lbs.
Kinds of operation	VFR-Day
Maximum baggage: 40 lbs. solo front; 20 lbs. solo rear	

FIGURE 5.

Sample operation limitations placard for a typical light aircraft certificated under Civil Air Regulations Part 4a.



- (4) On aircraft for which there is no approved flight manual required, the operating limitations prescribed during original certification and as required by FAR 91.31 must be carried in the aircraft. Where appropriate, these can be range markings on the instruments. Another method may be in the form of typed data on cards similar to 3" x 5" file cards. For convenience these can be covered with clear plastic and mounted in a conspicuous place in the cabin or cockpit. See Figure 5.
- f. Completion of the FAA Form 8320-3. Within 48 hours after completion of the annual inspection, the Aircraft Use and Inspection Report, FAA Form 8320-3, should be completed and mailed to the local General Aviation District Office. Advisory Circular 43.11-1B, Aircraft Use and Inspection Report, or subsequent revision, describes how to complete the form. See sample form in Figure 6. For use of the form on progressive inspections, see FAR 43, Appendix C. The forms may be mailed without folding unless the aircraft is reported as "unairworthy." In this case, the discrepancy list may be enclosed by folding and stapling the form.
- g. Aircraft Markings. It is the owner/operator's responsibility to have the nationality and registration marks properly displayed on the aircraft. (FAR 91.31(c).) AIs can, and should, offer advisory service to owners and operators in regard to any deficiencies in marking; however, they are not cause to report an aircraft "unairworthy." FAR 45 sets forth the required identification markings of aircraft.
- h. Inspection Reminder. Encourage owners to use the inspection reminder, FAA Form 8320-2. When you perform an annual inspection, complete the inspection due date and install the sticker in a conspicuous place in the cockpit or where it will be seen during a preflight inspection. (Inspection date September 15, 1966; due date September 30, 1967.) See the example in Figure 8.
- i. Unairworthy Aircraft. If the aircraft is not approved for return to service, use the procedures specified in FAR 43.11(a)(5). This will permit an owner to assume responsibility for having the discrepancies corrected prior to operating the aircraft.
- (1) The discrepancies can be cleared by an A&P mechanic unless they consist of major repairs or alterations. If preventive maintenance, they could be cleared by an owner or pilot.
  - (2) The owner may want the aircraft flown to another location to have repairs completed, in which case he should be advised that a special flight authorization (ferry permit) is necessary. Have him contact the FAA GADO for the authorization.

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FIGURE 6.

Showing a typical FAA Form 8320-3 after completion of an Annual Inspection. Detailed instructions for the completion of this form appear in AC 43.11-1B. This form must be submitted within 48 hours after the completion of an Annual Inspection. See Figure 7, for sample discrepancy list when reporting an aircraft unairworthy. While the name of the inspection has been changed, you may continue to use forms with the name "periodic" inspection until directed otherwise.

FORM APPROVED  
BUDGET BUR. NO. 04-R063

DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION <b>AIRCRAFT USE AND INSPECTION REPORT</b>																					
PRINT OR TYPE ALL ENTRIES EXCEPT SIGNATURES. SHADED BOXES ARE FOR FAA USE																					
SECTION I—IDENTIFICATION																					
1. AIRCRAFT REGISTRATION MARK <b>N- 40023</b>		AIRCRAFT MFR. SERIAL NO. <b>63-11046</b>																			
2. AIRCRAFT MAKE <b>Zeph-Air</b>		AIRCRAFT MODEL <b>63-1A</b>																			
3. NAME OF OWNER (As shown on Certificate of Registration) <b>Robert D. Thomas</b>																					
4. ADDRESS OF OWNER (As shown on Certificate of Registration) NUMBER AND STREET: <b>606 Elm Street</b> CITY: <b>Urbana</b> STATE: <b>Illinois</b> ZIP CODE: <b>06114</b>																					
5. AIRCRAFT IS BASED AT: AIRPORT: <b>Skyhome</b> CITY: <b>Urbana</b>		COUNTY: <b>Champaign</b> STATE OF: <b>Illinois</b>																			
SECTION II—ACTIVITY DATA																					
6. DATE OF PREVIOUS ANNUAL INSPECTION <b>1/12/64</b>		AIRCRAFT TIME IN SERVICE PREVIOUS 12 MONTHS <b>158</b> HRS.																			
7. PRIMARY USE OF AIRCRAFT (Check one box only)																					
1	EXECUTIVE TRANSPORTATION	6	AIR TAXI																		
2	<input checked="" type="checkbox"/> BUSINESS TRANSPORTATION	7	INDUSTRIAL, SPECIAL																		
3	PERSONAL	8	OTHER (Specify)																		
4	AERIAL APPLICATION																				
5	INSTRUCTION																				
SECTION III—INSPECTION REPORT																					
8. NAME OF INSPECTING AGENCY <b>George B. Jones</b>																					
9. TYPE INSPECTING AGENCY 3 <input checked="" type="checkbox"/> INSPECTION AUTHORIZATION 5 <input type="checkbox"/> MANUFACTURER 6 <input type="checkbox"/> REPAIR STATION		CERTIFICATE NO. AND TYPE <b>IA 272182</b>																			
10. TYPE OF INSPECTION 1 <input checked="" type="checkbox"/> ANNUAL 2 <input type="checkbox"/> PROGRESSIVE		DATE OF INSPECTION <b>2/9/65</b> CONDITION OF AIRCRAFT 1 <input checked="" type="checkbox"/> AIRWORTHY 2 <input type="checkbox"/> UNAIRWORTHY																			
11. SIGNATURE OF CONDUCTOR OF THIS INSPECTION <i>George B. Jones</i>																					
<table border="1"> <tr> <td>EA</td> <td>SW</td> <td>CE</td> <td>WE</td> <td>AL</td> <td>PC</td> <td>SO</td> <td>ED</td> <td>FAA DIST. OFF. NO.</td> </tr> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> <td></td> </tr> </table>				EA	SW	CE	WE	AL	PC	SO	ED	FAA DIST. OFF. NO.	1	2	3	4	5	6	7	8	
EA	SW	CE	WE	AL	PC	SO	ED	FAA DIST. OFF. NO.													
1	2	3	4	5	6	7	8														

FAA Form 8320-3 (11-67) FORMERLY FAA FORM 2350

GPO : 1967 OF-283-055

Danville, Illinois  
February 9, 1965


Mr. Robert D. Thomas  
606 Elm Street  
Urbana, Illinois

Dear Mr. Thomas:

This is to certify that on February 9, 1965, I completed an annual inspection on your aircraft Zeph-Air 63-1A, S/N 63-11046, N 40023, and found it to be in unairworthy condition for the following reasons:

1. Engine logbook entry indicates that the engine had been overhauled but had not been approved for return to service as required by section 43.5 of the Federal Aviation Regulations.
2. Fabric on both horizontal stabilizers tests below allowable minimum of 56 lbs.
3. Number three cylinder compression checks below manufacturer's recommendations.

Your aircraft will be considered to be in an airworthy condition when the above listed discrepancies have been corrected and approved for return to service by a person authorized in Part 43 of the FARs.

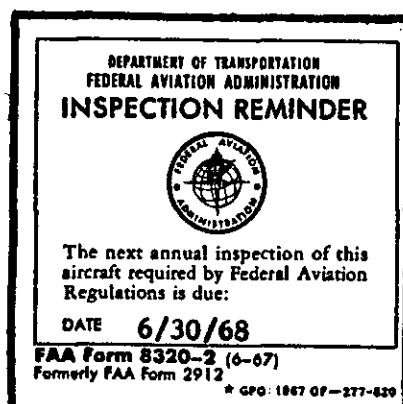
  
George B. Jones  
IA 272182

cc: FAA District Office


FIGURE 7

Sample discrepancy list to be provided an aircraft owner when reporting an aircraft "unairworthy" on FAA Form 8320-3.

4/15/69



DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
**INSPECTION REMINDER**



The next annual inspection of this aircraft required by Federal Aviation Regulations is due:

DATE **6/30/68**

**FAA Form 8320-2 (6-67)**  
Formerly FAA Form 2912

\* GPO: 1967 OF-277-629

FIGURE 8.

AIs should issue FAA Form 8320-3 on completing annual inspections. The form is issued regardless of airworthy or unairworthy findings. The date the next Annual Inspection is due will be the last day of the month, 12 months following the date of the inspection. AIs may receive a supply of these forms from the FAA field offices.

- (3) There is no stigma attached to the aircraft because it was reported as "unairworthy." In effect, the report says the aircraft is airworthy with the exception of the items on the discrepancy list. When those listed items are corrected, the aircraft is eligible to be operated.
- j. Incomplete Inspection. In the event the annual inspection is not entirely completed, the AI:
  - (1) Should indicate in the aircraft records any discrepancies he has found.
  - (2) Should NOT indicate that an annual inspection was conducted.
  - (3) Will not forward the inspection report FAA Form 8320-2.
8. MAINTENANCE RECORDS. The AI and other maintenance personnel or agencies are required to record maintenance, inspections, or alterations that they perform or approve in accordance with the requirements of FAR 43.9 and 43.11. FAR 91.173 requires the owner/operator to keep maintenance records and to present them each time an inspection, repair, or alteration is performed. He is also required to indicate the time in service when the work is done. See Figures 9 and 10 for typical entries used by AIs.
  - a. Significance of Maintenance Record Entries. Responsibility for maintenance performed rests with the person who enters his name on the appropriate maintenance records and/or forms. The responsibility for annual and progressive inspections and for approval and return to service of major repairs or alterations is assumed by the AI whose signature appears on the appropriate maintenance records.
  - b. Completion of FAA Form 337 by AIs. See Figure 11. The FAA Form 337 serves two purposes; one is to provide owners/operators with a record of major repairs and alterations indicating details and approval, and the other is to provide the FAA with a copy for the records. The FAA copy of FAA Form 337 is retained by the Agency's Data Services Division, AC-300, P.O. Box 25082, Oklahoma City, Oklahoma 73125. Copies of these forms may be obtained for established fees.
    - (1) The person who performed or supervised the repair or alteration prepares the original FAA Form 337 (two copies). The AI then further processes the forms when they are presented to him for approval.
    - (2) The official instructions for the completion of the form appear in AC 43.9-1B, or subsequent revisions.
  - c. Disposition of FAA Form 337.
    - (1) After the AI has found the alteration or repair to be in accordance with FAA-approved data, reviewed the FAA Form 337 for completeness, and completed item 7, he:

January 18, 1967. Total aircraft time 853.00 hours, Tach reading 420.80. Replaced right main wheel bearing, P/N 19844, upper bushing in R & L landing gear frames, both brake hoses, P/N 34052, and bled brakes. I certify that this aircraft has been inspected in accordance with an annual inspection and was determined to be in airworthy condition.

*George B. Jones*  
George B. Jones IA 272182

FIGURE 9.

Sample logbook entry for a typical annual inspection when the aircraft is found to be "airworthy." Note that the date, aircraft total time, and Tach or recorder reading are included. The tach or recorder reading should not be confused with the total time and should only be shown IN ADDITION to the total time entry. The mechanic has indicated he holds an Inspection Authorization by prefixing his certificate number with the letters "IA."

January 18, 1967. Total time 853.00 hours, Tach reading 420.80. I certify that this aircraft has been inspected in accordance with an annual inspection and a list of discrepancies and unairworthy items dated (insert date) has been provided for the aircraft owner or lessee.

*George B. Jones*  
George B. Jones IA 272182

FIGURE 10.

Required entry for Annual Inspection when aircraft is found to be "unairworthy." Note that the date, total time, and tach reading are included.

FEDERAL AVIATION AGENCY <b>MAJOR REPAIR AND ALTERATION</b> (Airframe, Powerplant, Propeller, or Appliance)				Form Approved Budget Bureau No. 04-R060.1 <b>FOR FAA USE ONLY</b> OFFICE IDENTIFICATION	
INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form.					
1. AIRCRAFT	MAKE	MODEL			
	SERIAL NO.	NATIONALITY AND REGISTRATION MARK			
2. OWNER	NAME (As shown on registration certificate)		ADDRESS (As shown on registration certificate)		
	Robert D. Thomas		606 Elm Street Urbana, Illinois		
3. FOR FAA USE ONLY					
4. UNIT IDENTIFICATION					
UNIT	MAKE	MODEL	SERIAL NO.	5. TYPE	
AIRFRAME	***** (As described in item 1 above) *****			REPAIR	ALTERATION
POWERPLANT					
PROPELLER					
APPLIANCE	TYPE				
	MANUFACTURER				
6. CONFORMITY STATEMENT					
A. AGENCY'S NAME AND ADDRESS		B. KIND OF AGENCY		C. CERTIFICATE NO.	
Lawrence M. Youngster 4702 Maple Street Danville, Illinois		<input checked="" type="checkbox"/> U.S. CERTIFICATED MECHANIC <input type="checkbox"/> FOREIGN CERTIFICATED MECHANIC <input type="checkbox"/> CERTIFICATED REPAIR STATION <input type="checkbox"/> MANUFACTURER		AIRFRAME 52547-41	
D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.					
DATE 2/6/65		SIGNATURE OF AUTHORIZED INDIVIDUAL <i>Lawrence M. Youngster</i> Lawrence M. Youngster			
7. APPROVAL FOR RETURN TO SERVICE					
Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Agency and is <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED					
BY	FAA P.T. STANDARDS INSPECTOR	MANUFACTURER	X	INSPECTION AUTHORIZATION	
	FAA DESIGNEE	REPAIR STATION		OTHER (Specify)	
DATE OF APPROVAL OR REJECTION 2/9/65		CERTIFICATE OR DESIGNATION NO. 272182		SIGNATURE OF AUTHORIZED INDIVIDUAL <i>George B. Jones</i> George B. Jones	

FAA Form 337 (1-65) OBSOLETE PREVIOUS EDITION

0032-025-8000 (8320)

FIGURE 11.

Typical completion of the face of FAA Form 337. Detailed instructions for the use of this form are in FAR Part 43 and Advisory Circular 43.9-1B or subsequent revision.

- (a) Transmits the original FAA Form 337 to the owner/operator.
- (b) Forwards the copy to the local FAA office within 48 hours.
- (2) AIs should insure that the copy is an exact and legible reproduction of the original. The signatures should not be carbon copies but original signatures in ink.
- (3) In the event the FAA Form 337 has been completed for spare parts or components, both copies of the form with the approval portion (item 7) completed should be attached to the part or component until it is installed on an aircraft.
  - (a) Those items identifying the component with a particular aircraft and the owner's name and address will be left blank on the form.
  - (b) The installing mechanic will complete both copies of the form by filling in the blank items and will sign for the installation in the aircraft records. He should make reference to the FAA Form 337 in his record entry.
  - (c) The original copy of the completed FAA Form 337 goes to the owner/operator of the aircraft upon which the component was installed.
  - (d) The duplicate copy is forwarded to the FAA office for the area where the installing mechanic is operating.
- d. When FAA Form 337s are received the FAA office may review them for completeness and accuracy. In the event they find discrepancies, they will return the form to the approving AI and request that it be corrected. Since it usually entails considerable time and effort in locating the owner/operator's copy of the form to make corrections, the AI should review the form carefully at the time of approval. The most common causes for FAA return of the form are:
  - (1) Item 8 (reverse of the form) lacks sufficient information to adequately locate and describe the repair or alteration and the basis for approval. The information given in this block should be extremely specific in identifying the data that was utilized in making the repair or alteration. A general reference to FAR 43 or AC 43.13-1 for repairs is not sufficient. Identify specific drawings, sections in AC 43.13-1, or manufacturer's instructions. If an advisory circular is utilized, identify it by title, number, and issuance date.



- (2) Omission of, or incorrect reference to, model and serial number. Transfer this information directly from the nameplate or registration form of the aircraft concerned. Do not use manufacturers' trade names.
  - (3) Signatures missing, either mechanic or AI.
  - (4) The FAA Form 337 was completed for a minor repair or alteration or solely for a weight and balance report. Weight and balance reports, in most cases, are separate documents and usually incorporate lists and loading schedules.
- e. Weight and Balance. Weight and balance entries are no longer required on the FAA Form 337. As this data is no longer reviewed by FAA inspectors, it is imperative that weight and balance checks and computations be made very carefully. Since practically every aircraft manufacturer uses a different method of weight and balance control, it would be impossible to provide a universally adaptable method. The examples provided in Figure 12, will be general in nature and can be modified or revised as needed to fit the aircraft involved. When revising weight and balance data, these general rules should be followed:
- (1) The weight and balance data should be kept together in the aircraft records.
  - (2) When making revisions, use a permanent easily identified method, with full-size sheets of paper large enough to contain complete computations and to minimize the possibilities of their becoming detached or lost.
  - (3) The pages should be identified with the aircraft by make, model, serial number, and registration number.
  - (4) The pages should be signed and dated by the person making the revision.
  - (5) Describe nature of the weight change.
  - (6) The old weight and balance data should be marked superseded and dated.
  - (7) The new page should show the date of the old figures it supersedes.
  - (8) Appropriate fore and/or aft extreme loading conditions should be investigated and the computations shown.

Weight & Balance  
Zeph-Air 680  
N 5436E  
S/N 680 - 628-1

8/25/65  
Supersedes computation on  
FAA Form 337 of 7/30/64

Installed Item 412c, RCA AVQ-50 Weather Radar.

	<u>Weight</u>	<u>Arm</u>	<u>Moment</u>
Aircraft	3990 lbs.	174.6	696654.0
Radar	120 "	124.0	14880.0
	4110 "		711534.0

$$ECG = \frac{711534}{4110} = 173.1$$

#### Forward Loading Condition

	<u>Weight</u>	<u>Arm</u>	<u>Moment</u>
Aircraft	4110 lbs.	173.1	711441.0
2 pilots	340 "	94.0	31960.0
2 passengers	340 "	128.0	43520.0
8.5 gal. oil	64 "	191.0	12224.0
Min. fuel, 53.3 gal.	320 "	187.0	59840.0
	5174 "		858985.0

$$CG = \frac{858985}{5174} = 166.0'$$

Forward CG limit = 166.0'

#### Loading Subtotals

	<u>Weight</u>	<u>Arm</u>	<u>Moment</u>
Corrected Empty Weight	4110.0 lbs.	173.1	711
Usable oil 8.5 gal.	64.0 "	191.0	12
Pilot	170.0 "	94.0	16
	4344.0 "		739

(Use these subtotal figures when checking aircraft loading on loading chart)

*George B. Jones*  
George B. Jones  
IA 272182

FIGURE 12.

Sample weight and balance revision for a typical light, twin aircraft. Note that computations are shown. Form is signed, dated, and identifies the computations or figures it supersedes.

- (9) Sample loading computations may be helpful.
- (10) On large aircraft, be careful to distinguish between empty weight and operating weights that may include items such as commissary supplies, spare parts, lavatory water, etc.
- (11) On small aircraft it is often convenient to post a placard in the aircraft indicating the empty weight, useful load, and empty c.g. along with sample loadings or general instructions to cover the most likely used loading conditions.  
(Ref: FAR 91.31(b)(3).)

# APPENDIX 1. PUBLICATIONS

1. REGULATIONS.<sup>\*</sup> The following list includes regulations the AI uses most frequently. Those marked with an asterisk should be available for reference when taking the test for Inspection Authorization.

PART NO.	FEDERAL AVIATION REGULATIONS (NEW) TITLE	PRICE
*65	CERTIFICATION: AIRMEN OTHER THAN FLIGHT CREWMEMBERS	.35
*43	MAINTENANCE, PREVENTIVE MAINTENANCE REBUILDING, AND ALTERATION	.55
* 1	DEFINITIONS AND ABBREVIATIONS	.45
*21	CERTIFICATION PROCEDURES FOR PRODUCTS AND PARTS	.60
*23	AIRWORTHINESS STANDARDS: NORMAL, UTILITY, AND ACROBATIC CATEGORY AIRPLANES	1.25
27	AIRWORTHINESS STANDARDS: NORMAL, CATEGORY ROTORCRAFT	.70
33	AIRWORTHINESS STANDARDS: AIRCRAFT ENGINES	.40
35	AIRWORTHINESS STANDARDS: PROPELLERS	.30
37	TECHNICAL STANDARD ORDER AUTHORIZATIONS	1.00
*39	AIRWORTHINESS DIRECTIVES VOLUME 1, UNDER 12,500 LBS. VOLUME 2, OVER 12,500 LBS.	.20 5.25 6.00
45	IDENTIFICATION AND REGISTRATION MARKING	.20
47	AIRCRAFT REGISTRATION	.25
*91	GENERAL OPERATING AND FLIGHT RULES	1.25

\* See Important Notice, Appendix 2, page 1.

2. TECHNICAL DATA. The following should be available when taking the AI test:
- a. Aircraft Type Certificate Data Sheets and Specifications. Basic subscription consists of specifications and type certification data sheets in all weight groups; monthly supplements for approximately one year; the Aircraft Listing; and Index. Prices: \$20.00 domestic; \$25.00 foreign. Order from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.
  - b. Aircraft Engine and Propeller Type Certificate Data Sheets and Specifications. Basic subscription consists of engine and propeller specifications; monthly supplements for approximately one year; the Listings; and Indexes. Prices: \$16.00 domestic; \$20.00 foreign. Order from GPO.
  - c. The Airworthiness Directives are now summarized in two volumes, one covering small aircraft and the other large aircraft. Each volume may be purchased separately on subscription which consists of the basic volume plus annual supplements.
    - (1) Summary of Airworthiness Directives for Small Aircraft. Volume I, \$5.25 domestic; \$6.50 foreign. Order from GPO.
    - (2) Summary of Airworthiness Directives for Large Aircraft. Volume II, \$6.00 domestic; \$7.25 foreign. Order from GPO.
  - d. Acceptable Methods, Techniques, and Practices. These advisory circulars replace the policy material formerly contained in CAM 18. Order from GPO.
    - (1) AC 43.13-1, Acceptable Methods, Techniques, and Practices - Aircraft Inspection and Repair, \$3.00 domestic; \$4.00 foreign.
    - (2) AC 43.13-2, Acceptable Methods, Techniques, and Practices - Aircraft Alterations, \$2.00 domestic; \$2.50 foreign.
3. ORDERING FARs AND TECHNICAL DATA. Orders for the FARs and technical data should include remittance by check or money order made payable to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Except where otherwise designated, orders from foreign countries should include an additional amount of about one-fourth the purchase price to cover foreign postage. Remittance should be by International Money Order or by a draft on a U.S. bank.

4. ADVISORY CIRCULARS. To receive advisory circulars, write to Department of Transportation, Federal Aviation Administration, Distribution Unit, TAD-484.3, Washington, D.C. 20590. You may ask to be put on the mailing list to receive those circulars that are free concerning subjects of interest to you such as:

- AC 00 General
- AC 10 Procedural
- AC 20 Aircraft (Includes 30 and 40)
- AC 60 Airmen
- AC 70 Airspace
- AC 90 General Operations
- AC 120 Air Carrier and Commercial Operators

The basic number of an advisory circular is always the same as the FAR to which it is related. For instance, this handbook concerns FAR 65.95 and is so numbered.

- a. General Aviation Inspection Aids. Advisory Circular 20-7 consists of a summary and 11 monthly supplements. Order from GPO: \$2.00 domestic; \$2.50 foreign for each subscription.
- b. Summary of Supplemental Type Certificates. Advisory Circular 21-5 announces the availability of this summary. Order copies from the United States Government Printing Office and remit \$9.00 (add \$3.50 for foreign mailing) for each volume requested. Identify the publication as Summary of Supplemental Type Certificates, Advisory Circular, 21-5.

### IMPORTANT NOTICE

The Federal Aviation Administration is reissuing the Federal Aviation Regulations (FAR) in a volume system to be sold on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

The purchase of a FAR volume will establish your subscription service with the Superintendent of Documents for automatic receipt of changes to the volume as issued by FAA.

The volume structure is:

<u>Volume</u>	<u>FAR Part</u>
I -----	1.
II -----	11, 13, 15, 21, 37, 39, 45, 47, 49, 183, 185, 187, 189.
III -----	23, 25.
IV -----	27, 29, 31, 33, 35.
V -----	43, 145, 149.
VI -----	91, 93, 99, 101, 103, 105.
VII -----	121, 123, 127, 129.
VIII-----	133, 135, 137.
IX -----	61, 63, 65, 67, 141, 143, 147.
X -----	151, 153, 155, 159, 165, 167.
XI -----	71, 73, 75, 77, 95, 97, 157, 169, 171.

As each volume is issued, an availability notification providing price and order form will be issued and distributed by the Superintendent of Documents. However, until all FAR Parts are grouped in their respective volumes and the volumes are available for sale from the Superintendent of Documents, the present system of obtaining individual FAR Parts and revision service to them will remain in effect.

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FEDERAL AVIATION ADMINISTRATION  
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