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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2010-1013; Directorate Identifier 2010-CE-048-AD; Amendment 39-16478; AD 2010-21-18]

RIN 2120-AA64

Airworthiness Directives; Cessna Aircraft Company (Cessna) Models 336, 337, 337A (USAF 02B), 337B, M337B (USAF 02A), T337B, 337C, T337C, 337D, T337D, 337E, T337E, 337F, T337F, 337G, T337G, 337H, P337H, T337H, T337H-SP, F337E, FT337E, F337F, FT337F, F337G, FT337GP, F337H, and FT337HP Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule; request for comments.

SUMMARY: We are adopting a new airworthiness directive (AD) for the products listed above. This AD requires inspecting the wings for internal and external damage, repairing any damage found, installing an operational limitation placard in the cockpit, adding limitations to the flight manual supplement, and reporting the results of the inspection to the FAA if damage is found. This AD was prompted by a wing overload failure and by reports of cracks in the upper wing skins on certain Cessna airplanes that are or have ever been modified by Aviation Enterprises Supplemental Type Certificate (STC) SA02055AT, SA02056AT, SA02307AT, or SA02308AT. We are issuing this AD to detect and correct damage in the wings and to prevent overload failure of the wing due to the installation of the STCs. Damage in the wing or overload failure of the wing could result in structural failure of the wing, which could result in loss of control.

DATES: This AD is effective November 3, 2010.

We must receive comments on this AD by December 3, 2010.

ADDRESSES: You may send comments by any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: 202-493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590.

- Hand Delivery: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

Examining the AD Docket

You may examine the AD docket on the Internet at <http://www.regulations.gov>; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Office (phone: 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: William O. Herderich, Aerospace Engineer, FAA, Atlanta Aircraft Certification Office, 1701 Columbia Avenue, College Park, Georgia 30337; phone: (404) 474-5547; fax: (404) 474-5605; e-mail: William.O.Herderich@faa.gov.

SUPPLEMENTARY INFORMATION:

Discussion

In September 2000, we were notified of structural wing damage to a Cessna Model T337G airplane equipped with Aviation Enterprises wing extensions STC SA02055AT. The damage was described as starting with loose and working (smoking) rivets in the upper surface of the wing, progressing to buckling of the skins just outboard of the fuel tank access covers, loose wing extensions, and finally cracking in the wing skins. Based on discussions with the STC holder at that time, we believed that the damage to the airplane was the result of operation from unimproved airstrips and was an isolated event. In response to this event, Aviation Enterprises issued Wing Extension Service Letter AE 01-11-00. This letter recommended installing a placard on the instrument panel advising the pilot of weight and airspeed limitations and notes that landing on unpaved runways is not recommended. No further action was taken at this time.

About ten years later, in February 2010, we received a report of an accident involving a Cessna Model 337 airplane modified with Aviation Enterprises wing extensions STC SA02055AT (along with Aviation Enterprises STC SA01094AT winglets). Investigation of the incident revealed cracks in the upper wing skins just outboard of the fuel tank access covers near wing station (WSTA) 150. The cracks were on both wings of the airplane and covered by repair patches. The wing skin cracks matched the description of those found in the September 2000 incident.

In response to these problems and without determining that there was an unsafe condition under 14 CFR part 39, we issued Special Airworthiness Information Bulletin (SAIB) CE-10-20. This SAIB recommended that Cessna Model 336 and 337 series airplanes equipped with wingtip extensions have a one-time inspection for internal and external damage from WSTA 23 to the wing tip within the next 100 hours time-in-service. The SAIB listed focused inspection areas based on the previously reported damage. The SAIB also contained a request for the inspection results to be sent to the FAA if damage was found.

As a result of the inspection report request in the SAIB, one report was received. In this report, it was stated that the damage to the airplane included loose and working (smoking) rivets in the upper surface of the wing, buckling of the upper surface skins and stringers just outboard of the fuel tanks access covers, and cracking in the wing skins. There was also an upper surface skin buckle near WSTA 60 near the boom. The cracks on this airplane match those found from both previously referenced incidents. In all reported cases, the skin cracks occurred in the wing skin under and just outboard of the wing tank access cover. However, the location of the cracks on this aircraft was at WSTA 177, further outboard than the previously noted airplanes, because this airplane had additional extended range fuel tanks.

Further inspection revealed additional damage on the airplane that appeared to be a result of the installation of the wing extension modification. There was damage to the left and right WSTA 222 ribs, which had been torn, from the aft lightening hole to the lower surface and was bent down to allow installation of the wing extension fuel line. The fuel line appeared to be chafing on the torn metal. Also, extra holes drilled through the spar cap were found at several span-wise locations that were consistent with the stall fence attachments. These holes had been tapped (threaded) and were left open with no fastener installed. One of the holes was located so close to the edge of the spar cap, it was breaking out of the edge and was also located immediately adjacent to a fastener for the fuel tank access cover. Also found was the lack of nuts used for the wing extension attaching screws. It appeared that the holes in the substructure (skins, ribs, and spars) were tapped (threaded) to accept screws, rather than use nuts. Several access holes were also found cut into the lower surface of the skin that had no reinforcement.

The FAA reviewed information from the accident investigation, a number of service difficulty reports (SDRs), and data submitted by Aviation Enterprises for demonstrating compliance to the airworthiness standards. Based on the investigation, the FAA determined that Aviation Enterprises may not have adequately substantiated the wing structure for the increased limit and ultimate loads resulting from the wing extension. We also determined that weight, airspeed, ballast, and "g" limit restrictions need to be placed on these airplanes to allow them to operate within the minimum margins of safety.

These conditions, if not corrected, could result in structural failure of the wing, which could result in loss of control.

FAA's Determination

We are issuing this AD because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

AD Requirements

This AD requires inspecting the wings for internal and external damage, repairing any damage found, installing an operational limitation placard in the cockpit, and adding limitations to the flight manual supplement. The AD also requires reporting the results of the inspection to the FAA if damage is found.

FAA's Justification and Determination of the Effective Date

An unsafe condition exists that requires the immediate adoption of this AD. The FAA has found that the risk to the flying public justifies waiving notice and comment prior to adoption of this rule because cracks in the wings and potential for wing overload could result in structural failure of the wing, which could result in loss of control.

Therefore, we find that notice and opportunity for prior public comment are impracticable and that good cause exists for making this amendment effective in less than 30 days.

Comments Invited

This AD is a final rule that involves requirements affecting flight safety and was not preceded by notice and an opportunity for public comment. However, we invite you to send any written data, views, or arguments about this AD. Send your comments to an address listed under the ADDRESSES section. Include the docket number FAA-2010-1013 and Directorate Identifier 2010-CE-048-AD at the beginning of your comments. We specifically invite comments on the overall regulatory,

economic, environmental, and energy aspects of this AD. We will consider all comments received by the closing date and may amend this AD because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this AD.

Costs of Compliance

We estimate that this AD affects 12 airplanes of U.S. registry.

We estimate the following costs to comply with this AD:

Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
Inspection of the wing for damage	20 work-hours X \$85 per hour = \$1,700 per inspection cycle	Not applicable	\$1,700 per inspection cycle	\$20,400 per inspection cycle
Installing a placard in the cockpit	4 work-hours X \$85 per hour = \$340	Not applicable	\$340	\$4,080
Modifying the Limitations section of the Aviation Enterprises Aircraft Flight Manual Supplement	4 work-hours X \$85 per hour = \$340	Not applicable	\$340	\$4,080

We estimate the following costs to do any necessary repairs that will be required based on the results of the inspection. The cost for repair may vary from as little as replacing a bolt to as much as replacing a wing. We have no way of determining the number of aircraft that will need these repairs and the extent of the repair necessary. Below are estimates of some possible necessary repairs:

On-condition costs

Action	Labor cost	Parts cost
Install reinforcements around wing access holes cutouts, 2 per hole, 6 holes per airplane	12 work-hours X \$85 per hour = \$1,020	\$50
Replace upper outboard wing skins, 13 per side, 2 sides per airplane	26 work-hours X \$85 per hour = \$2,210	\$100 per side X 2 sides = \$200
Replace upper surface outboard stringers, 6 stringers per airplane	2 work-hours per stringer, 6 stringers per airplane = 12 work-hours X \$85 per hour = \$1,020	\$100
Replace screws with aviation standard fasteners with nuts/collars in cleaned up holes, 20 screws per side, 2 sides per airplane	40 work-hours X \$85 per hour = \$3,400	\$50
Spar repair (possible splice replacement and repairing 4 holes)	20 work-hours per repair per location X \$85 per hour = \$1,700	\$100 per location

Repair torn WSTA 222 Rib

5 work-hours per side, 2 sides per airplane = 10 work-hours X \$85 per hour = \$850

Authority for This Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. "Subtitle VII: Aviation Programs" describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Safety.

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

PART 39—AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):



2010-21-18 Cessna Aircraft Company: Amendment 39-16478; Docket No. FAA-2010-1013; Directorate Identifier 2010-CE-048-AD.

Effective Date

(a) This AD is effective November 3, 2010.

Affected ADs

(b) None.

Applicability

(c) This AD applies to Cessna Aircraft Company (Cessna) Models 336, 337, 337A (USAF 02B), 337B, M337B (USAF 02A), T337B, 337C, T337C, 337D, T337D, 337E, T337E, 337F, T337F, 337G, T337G, 337H, P337H, T337H, T337H-SP, F 337E, FT337E, F 337F, FT337F, F 337G, FT337GP, F337H, and FT337HP airplanes, all serial numbers, that:

- (1) Are certificated in any category; and
- (2) Are or have ever been modified by Aviation Enterprises Supplemental Type Certificate (STC) SA02055AT, SA02056AT, SA02307AT, or SA02308AT.

Subject

(d) Joint Aircraft System Component (JASC)/Air Transport Association (ATA) of America Code 57; Wings.

Unsafe Condition

(e) This AD was prompted by a wing overload failure and by reports of cracks in the upper wing skins on certain Cessna airplanes that are now or have ever been modified by Aviation Enterprises STC SA02055AT, SA02056AT, SA02307AT, or SA02308AT. We are issuing this AD to detect and correct damage in the wings and to prevent overload failure of the wing due to the installation of the STCs. Damage in the wing or overload failure of the wing could result in structural failure of the wing, which could result in loss of control.

Compliance

(f) Comply with this AD within the compliance times specified, unless already done.

Required Actions

(g) Before further flight after November 3, 2010 (the effective date of this AD), do a general and focused inspection of the wing for internal and external damage from wing station (WSTA) 23 to the wing tip. Repetitively thereafter inspect every 100 hours time-in-service (TIS) or every 12 calendar months, whichever occurs first, for as long as any of the STCs specified in paragraph (c) of this AD

are installed. If at any time the STCs are permanently removed, one final inspection is required following removal. Do the inspections following Appendix 1 of this AD.

(h) Anytime severe and/or extreme turbulence is encountered during flight, before the next flight, do a focused inspection of the wing for damage following steps 1, 2, 3, 4, 7, and 10 in Appendix 1 of this AD. Also inspect for signs of distress in the upper front spar in the area around WSTA 177. The definition of severe and extreme turbulence can be found in Table 7-1-9 of the FAA Aeronautical Information Manual (AIM). You may obtain a copy of the FAA AIM at http://www.faa.gov/air_traffic/publications/atpubs/aim/.

(i) For airplanes specified in paragraph (c) of this AD that are modified by STC SA02055AT or SA02308AT (wing extensions with fuel provisions), before further flight after November 3, 2010 (the effective date of this AD), do the following:

(1) Incorporate the information from Appendix 2 of this AD into the Limitations section of the Aviation Enterprises Aircraft Manual Supplement.

(2) Fabricate a placard (using at least 1/8-inch letters) with the following words and install the placard on the instrument panel within the pilot's clear view: "MTOW=4,700 LBS. MAINTAIN AT LEAST 12 GAL OF FUEL IN EACH WING TIP FOR AIRPLANE WEIGHTS ABOVE 3,300 LBS."

(j) For airplanes specified in paragraph (c) of this AD that are modified by STC SA02056AT or SA02307AT (wing extensions with no fuel provisions), before further flight after November 3, 2010 (the effective date of this AD), do the following:

(1) Incorporate the information from Appendix 3 of this AD into the Limitations section of the Aviation Enterprises Aircraft Manual Supplement.

(2) Fabricate a placard (using at least 1/8-inch letters) with the following words and install the placard on the instrument panel within the pilot's clear view: "MTOW=4,000 LBS, MAX MANEUVER=2.5 G, $V_a=100$ KCAS, $V_{no}=105$ KCAS, $V_{ne}=135$ KCAS. OPERATION RESTRICTED TO VFR"

(k) Before further flight after each inspection required in paragraphs (g) and (h) of this AD where damage or signs of distress are found, repair all damaged and distressed parts following FAA Advisory Circular (AC) 43.13-1B. You may obtain a copy of AC 43.13-1B at <http://rgl.faa.gov/>.

(l) Within 10 days after each inspection required in paragraphs (g) and (h) of this AD in which damage or distress is found, send a report to the FAA at the address specified in paragraph (o) of this AD. Include as much information as possible, including the "N" number, model number, serial number, list of STC modifications, TIS on the aircraft and wing extension, description of the damage (location, length, orientation, parts cracked, sketches, etc.), and if possible, pictures of the damage.

(m) For all airplanes specified in paragraph (c) of this AD that have STC SA02055AT, SA02056AT, SA02307AT, or SA02308AT permanently removed, do one final inspection as specified in paragraph (g) of this AD, take corrective actions as specified in paragraph (k) of this AD, report the results as specified in paragraph (l) of this AD, and remove the flight limitations specified in paragraphs (i) and (j) of the AD. No further action is required.

Alternative Methods of Compliance (AMOCs)

(n)(1) The Manager, FAA, Atlanta Aircraft Certification Office (ACO) has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight

Standards District Office, as appropriate. If sending information directly to the manager of the ACO, send it to the attention of the person identified in the Related Information section of this AD.

(2) Before using any approved AMOC, notify your Principal Maintenance Inspector or Principal Avionics Inspector, as appropriate, or lacking a principal inspector, notify your local Flight Standards District Office.

Related Information

(o) For more information about this AD, contact William O. Herderich, Aerospace Engineer, FAA, Atlanta Aircraft Certification Office (ACO), 1701 Columbia Avenue, College Park, Georgia 30337; phone: (404) 474-5547; fax: (404) 474-5605; e-mail: William.O.Herderich@faa.gov.

Appendix 1 to AD 2010-21-18—General and Focused Inspection Procedures

Perform a general and focused inspection of the wing for internal and external damage from wing station (WSTA) 23 to the wing tip. The general inspection must be performed in accordance with 14 CFR 43.15(c), using a checklist that includes at least the scope and detail of the items contained in Appendix D of 14 CFR part 43. The focused inspection must include the items listed below. Remove all wing access panels to conduct the inspections. Do these inspections following the manufacturer's service information (Cessna Maintenance/Service Manuals) and any other appropriate guidance, such as FAA Advisory Circular (AC) 43.13-1B Acceptable Methods, Techniques, and Practices—Aircraft Inspection and Repair. AC 43.13-1B can be found at <http://rgl.faa.gov/>.

Focused inspection items to look for:

- (1) Wrinkles in upper wing skins, from the outboard edge on the fuel tank access covers (WSTA 150 or 177) to the WSTA 222 (See View B, Figure 3).
- (2) Wrinkles in the upper wing skins from WSTA 55 to 66, adjacent to the booms (See View E, Figure 6).
- (3) Cracking of the upper wing skins. Pay particular attention to any wrinkles, the radius between stiffeners at WSTA 150 (under fuel tank covers), and unreinforced access holes (See View B, Figure 3).
- (4) Working (smoking) rivets outboard of the wing tank access covers.
- (5) Fasteners with less than two diameters edge distance.
- (6) Fasteners with less than four diameters center to center spacing.
- (7) Looseness of attachments of the tip extension to the wing and wing tip to wing extension when pushing up and down on the tip.
- (8) Any signs of distress along both front and rear spars, particularly in the area around WSTA 177.
- (9) Inspect under any repairs to the upper skins, particularly in the area just outboard of the fuel tank access covers as these may be covering up existing damage.
- (10) Inter-rivet buckling of the stringers attached to the upper surface skin, outboard of the fuel tank access covers (See View F, Figure 7).
- (11) Inspect rib at WSTA 222 for damage. Trimming of the rib may have been done to allow installation of fuel lines (See View A, Figure 2). Repair in accordance with AC 43.13-1B, Chapter 4, paragraph 4-58(g) and Figure 4-14, or by using another FAA-approved method that restores equivalent strength of the wing rib.

**Appendix 1 to AD 2010-21-18—General and Focused Inspection Procedures
(Continued)**

- (1) Inspect and identify screws, installed in tapped (threaded) holes in metal substructure, used to attach wing tips, stall fences, fuel and electrical components, and access doors. For tapped holes, remove fastener and open up the diameter to provide a smooth bore hole, for the smallest oversize fastener, using close tolerance holes noted in AC 43.13-1B, paragraph 7-39 or other FAA-approved scheme. Maintain minimum 2 x fastener diameter edge distance and 4 x fastener diameter center to center spacing. Select and install new, equivalent strength or stronger, fasteners with nuts/collars in accordance with AC 43.13-1B, Chapter 7 and AC 43.13-2B, paragraph 108 or other FAA-approved repair. New fasteners must not have threads in bearing against the sides of the holes.
- (2) Inspect wing skins for unreinforced cutouts. (See View C, Figure 4).
- (3) Inspect the upper spar cap horizontal flanges for open holes (See View D, Figure 5).

Appendix 1 to AD 2010-21-18 (Continued)

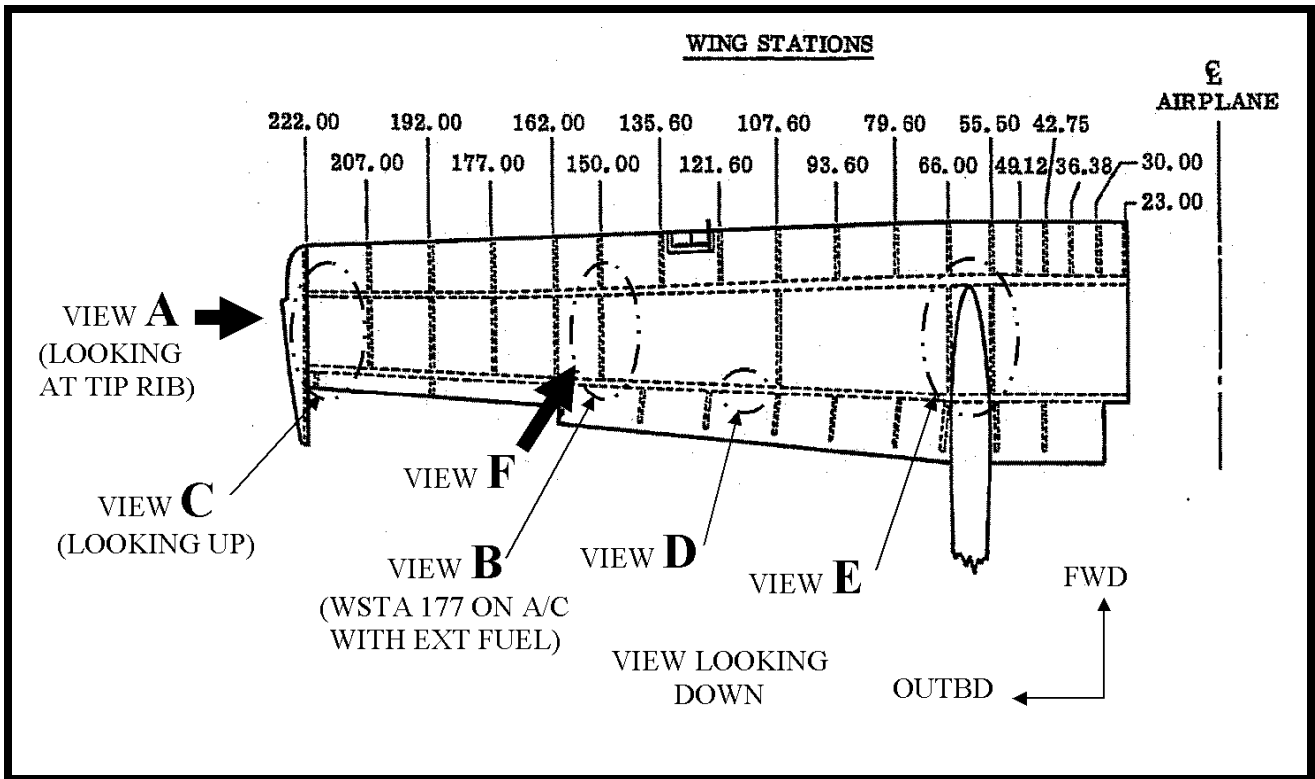


Figure 1

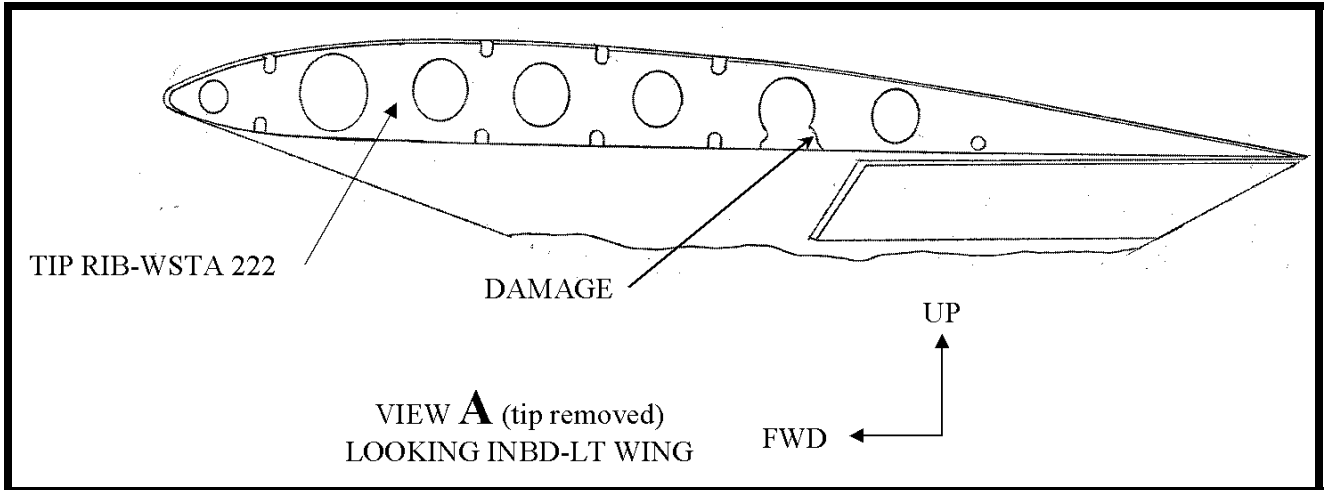


Figure 2

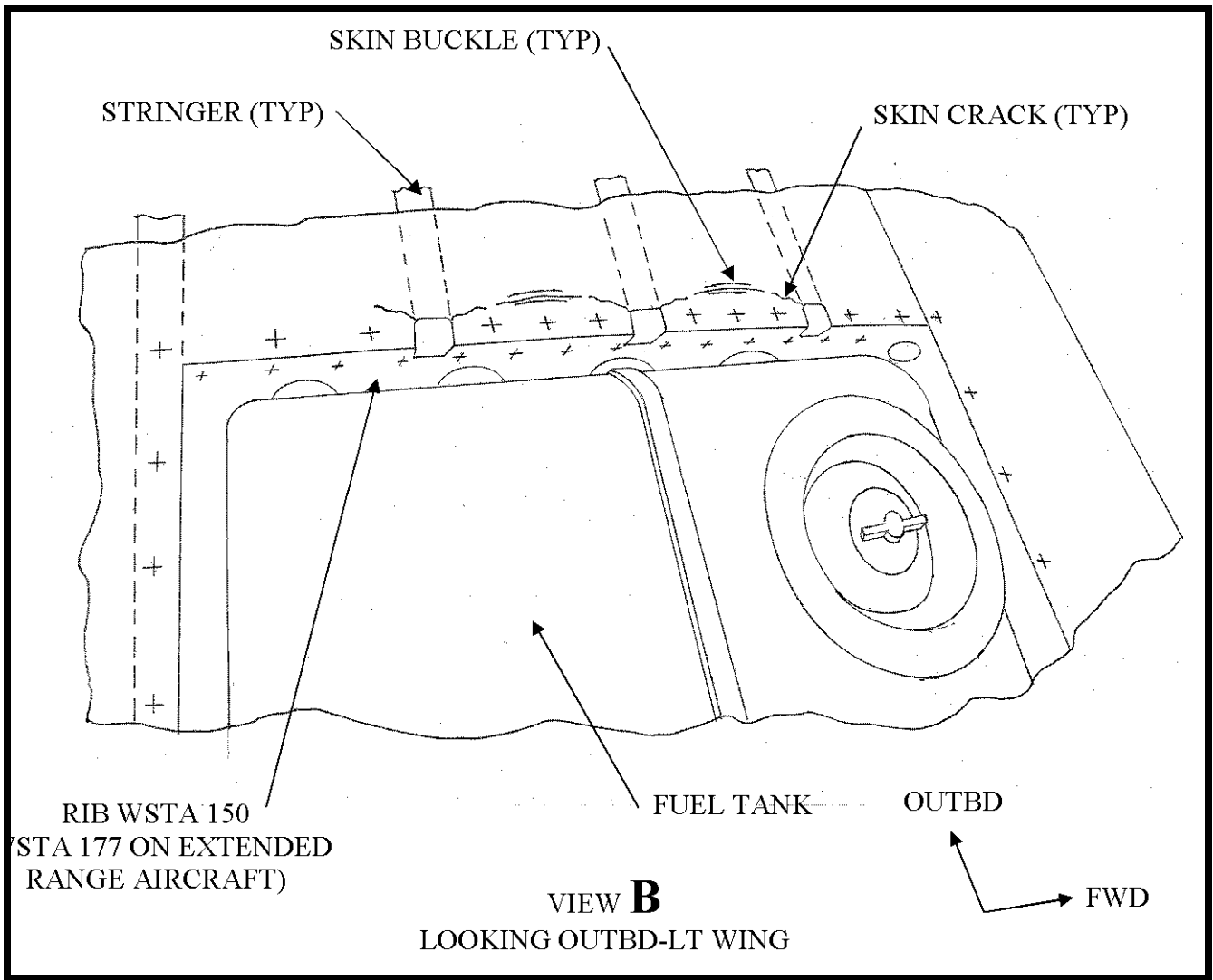


Figure 3

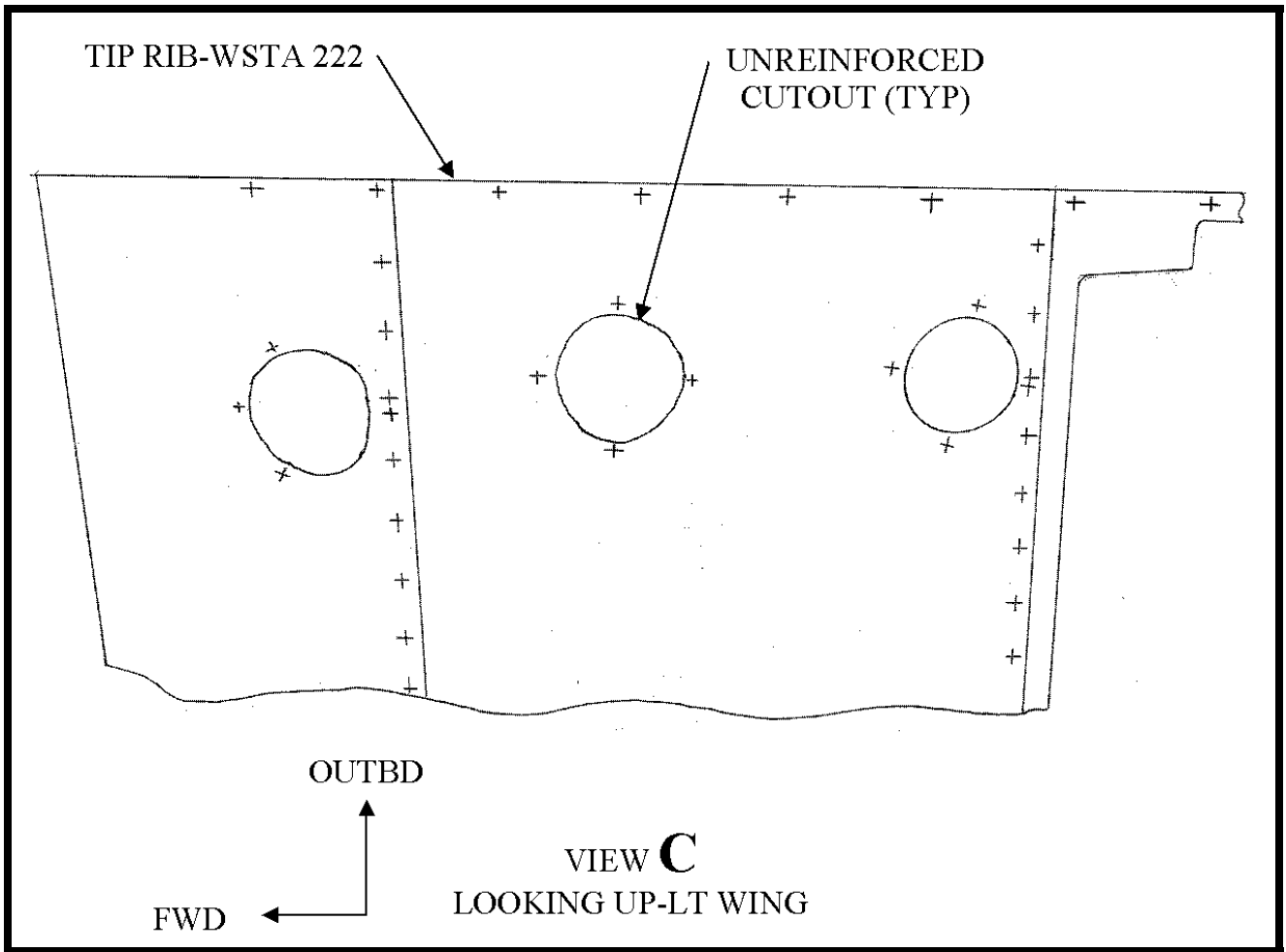


Figure 4

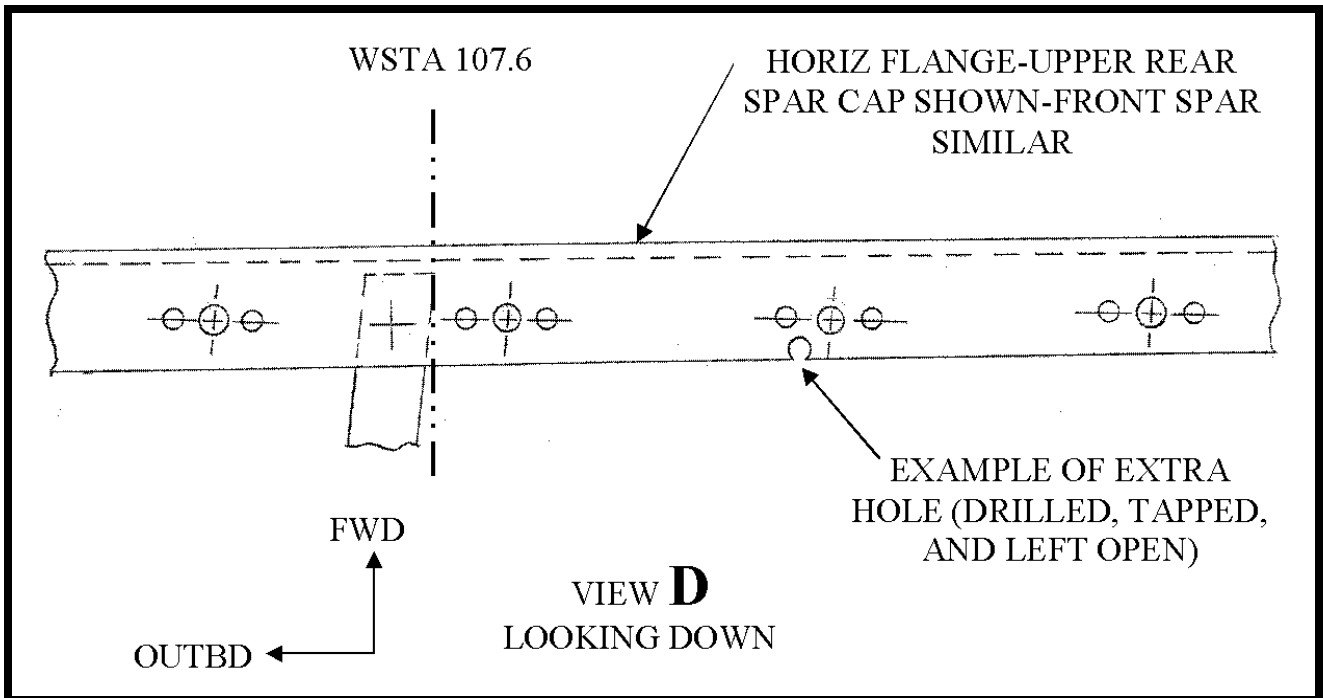


Figure 5

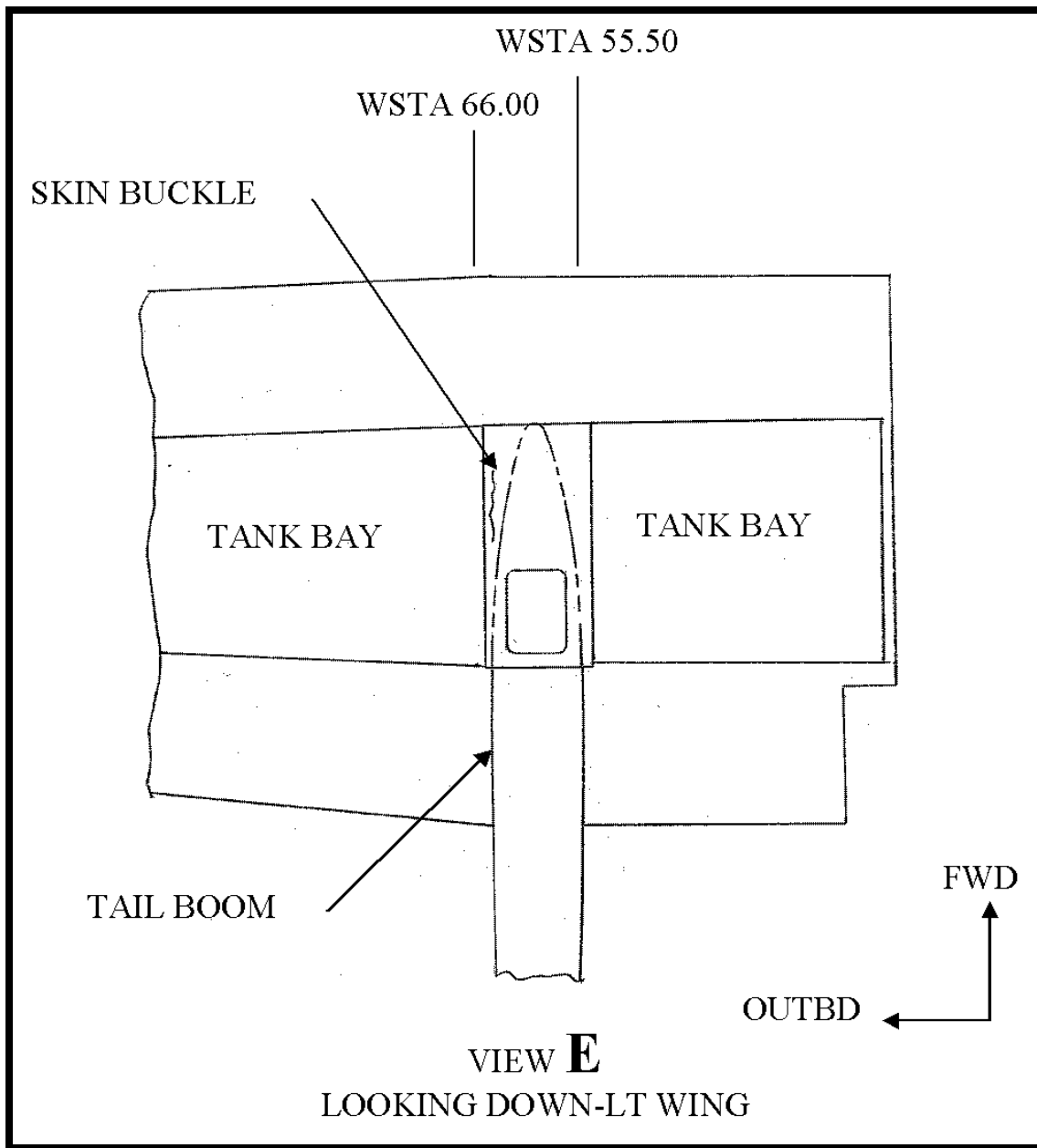


Figure 6

Appendix 1 to AD 2010-21-18 (Continued)

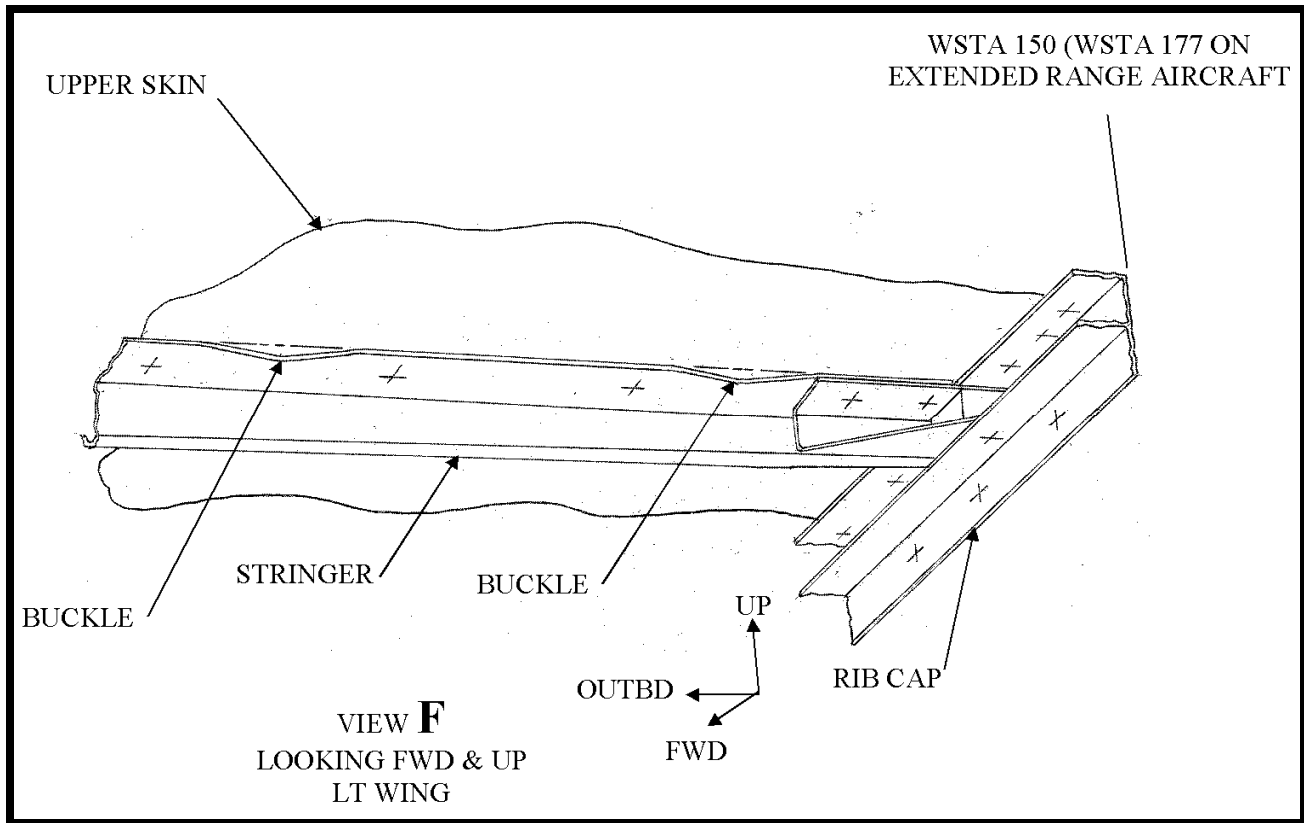


Figure 7

Appendix 2 to AD 2010-21-18–Airworthiness Limitations for the Aviation Enterprises Aircraft Manual Supplement

- (1) Limit the airplane MTOW to 4,700 LBS.
- (2) For airplane weights above 3,300 LBS, at least 12 gallons of fuel must be maintained in each wing tip.

Appendix 3 to AD 2010-21-18–Airworthiness Limitations for the Aviation Enterprises Aircraft Manual Supplement

- (1) Limit the MTOW to 4,000 LBS.
- (2) Limit the max maneuver to 2.5 G.
- (3) Limit V_a to 100 KCAS.
- (4) V_{no} to 105 KCAS.
- (5) Limit V_{ne} to 135 KCAS.
- (6) Limit operation to VFR only.

Issued in Kansas City, Missouri, on October 4, 2010.

Christina L. Marsh,
Acting Manager, Small Airplane Directorate,
Aircraft Certification Service.