

**2009-26-11 Thrush Aircraft, Inc.** (Type Certificate Previously Held by Quality Aerospace, Inc. and Ayres Corporation): Amendment 39- 16150; Docket No. FAA-2007-27862; Directorate Identifier 2007-CE- 036-AD.

**Effective Date**

(a) This AD becomes effective on February 24, 2010.

**Affected ADs**

(b) The following lists a history of the ADs affected by this AD action:

- (1) This AD supersedes AD 2006-07-15, Amendment 39-14542;
- (2) AD 2006-07-15 superseded AD 2003-07-01, Amendment 39-13097;
- (3) AD 2003-07-01 superseded AD 2000-11-16, Amendment 39-11764;
- (4) AD 2000-11-16 superseded AD 97-17-03, Amendment 39-10195; and
- (5) AD 97-17-03 superseded AD 97-13-11, Amendment 39-10071.

**Applicability**

(c) This AD affects the following airplane models and serial numbers (S/Ns) in Table 1 that are certificated in any category when wing front lower spar cap part numbers (P/Ns) 20207-1, 20207-2, 20207-11, 20207-12, 20207-13, 20207-14, 20207-15, or 20207-16 are installed. This AD applies to the S/Ns in Table 1 with or without a ``DC" suffix. This AD does not affect airplanes with any other wing front lower spar cap part number, e.g. Thrush P/N 22507 (any dash number) or Supplemental Type Certificate (STC) SA03654AT parts. The table also identifies the group that each airplane belongs in when determining inspection compliance times and life limit times for the parts:

**Table 1--Applicability and Airplane Groups**

<b>Model</b>	<b>S/Ns</b>	<b>Group</b>
(1) S-2R	5000R through 5100R, except 5010R, 5031R, 5038R, 5047R, and 5085R	1
(2) S2R-G1	G1-101 through G1-106	1
(3) S2R-R1820	R1820-001 through R1820-035	1
(4) S2R-T15	T15-001 through T15-033 (also see paragraph (d) of this AD)	1
(5) S2R-T34	6000R through 6049R, T34-001 through T34-143, T34-145, T34-171, T34-180, and T34-181 (also see paragraph (e) of this AD)	1
(6) S2R-G10	G10-101 through G10-138, G10-140, and G10-141	2
(7) S2R-G5	G5-101 through G5-105	2
(8) S2R-G6	G6-101 through G6-147	2

(9) S2RHG-T65	T65-002 through T65-018	2
(10) S2R-R1820	R1820-036	2
(11) S2R-T34	T34-144, T34-146 through T34-170, T34-172 through T34-179, and T34-189 through T34-234 (also see paragraph (e) of this AD)	2
(12) S2R-T45	T45-001 through T45-014	2
(13) S2R-T65	T65-001 through T65-018	2
(14) 600 S2D	All serial numbers beginning with 600-1311D	3
(15) S-2R	1380R, 1416R through 2592R, 3000R, and 3002R	3
(16) S2R-R1340	R1340-001 through R1340-035	3
(17) S2R-R3S	R3S-001 through R3S-011	3
(18) S2R-T11	T11-001 through T11-005	3
(19) S2R-G1	G1-107 through G1-115	5
(20) S2R-G10	G10-139, G10-142 through G10-165	5
(21) S2R-G6	G6-148 through G6-155	5
(22) S2RHG-T34	T34HG-102	5
(23) S2R-T15	T15-034 through T15-040 (also see paragraph (d) of this AD)	5
(24) S2R-T34	T34-236 through T34-270 (also see paragraph (e) of this AD)	5
(25) S2R-T45	T45-015	5
(26) S-2R	5010R, 5031R, 5038R, 5047R, and 5085R	6

(d) The S/Ns of Model S2R-T15 airplanes could incorporate T15- xxx and T27-xxx (xxx is the variable for any of the S/Ns beginning with T15- and T27-). This AD applies to both of these S/N designations as they are both Model S2R-T15 airplanes.

(e) The S/Ns of Model S2R-T34 airplanes could incorporate T34- xxx, T36-xxx, T41-xxx, or T42-xxx (xxx is the variable for any of the S/Ns beginning with T34-, T36-, T41-, and T42-). This AD applies to all of these S/N designations as they are all Model S2R-T34 airplanes.

(f) Any Group 3 airplane that has been modified with a hopper of a capacity more than 410 gallons, a piston engine greater than 600 horsepower, or a gas turbine engine greater than 600 horsepower, is a Group 1 airplane for the purposes of this AD. Inspect the airplane at the Group 1 compliance time specified in this AD. Replace the wing front lower spar caps in accordance with the formulas given in paragraph (k) of this AD.

(g) Group 6 airplanes were originally manufactured with higher horsepower radial engines, but were converted to lower horsepower radial engines. They are now configured identically to Group 3 airplanes.

## Unsafe Condition

(h) This AD is the result of the analysis of data from 117 wing front lower spar cap fatigue cracks found on similar design Model 600 S2D and S2R (S-2R) series airplanes and the FAA's determination that the replacement of high time wing front lower spar caps is necessary to address the unsafe condition for certain airplanes. Since we issued AD 2006-07-15, analysis reveals that inspections are not detecting all existing cracks, and incidences of undetected cracks are increasing. This AD retains the actions of AD 2006-07-15 and imposes a life limit on the wing front lower spar caps that requires you to replace the wing front lower spar caps when the life limit is reached. This AD also changes the requirements and applicability of the groups discussed above and removes the ultrasonic inspection method. We are issuing this AD to prevent wing front lower spar cap failure caused by undetected fatigue cracks. Such failure could result in loss of a wing.

## Compliance

(i) To address the problem, do the following, unless already done:

(1) If you have already done an inspection required by AD 2006-07-15, within the next 30 days after February 24, 2010 (the effective date of this AD), identify the number of hours time-in-service (TIS) since your last inspection required by AD 2006-07-15. You will need this to establish the inspection interval for the next inspection required by this AD.

(2) Inspect the two outboard bolt hole areas (whether 1/4-inch and 5/16-inch diameter bolt holes or both 5/16-inch diameter bolt holes) on each wing front lower spar cap for fatigue cracking using magnetic particle or eddy current procedures. If Kaplan splice blocks, P/N 22515-1/-3 or P/N 88-251, are installed following Quality Aerospace, Inc. Custom Kit No. CK-AG-30, dated December 6, 2001, inspect the three outboard bolt hole areas on each wing front lower spar cap for fatigue cracking using magnetic particle or eddy current procedures. Use the compliance times listed in paragraph (i)(3) of this AD for the initial inspection and the compliance time listed in paragraphs (i)(5), (i)(6), or (i)(7) of this AD for the repetitive inspections. The cracks may emanate from the bolt hole on the face of the wing front lower spar cap or they may occur in the shaft of the hole. Inspect both of those areas.

(i) If using the magnetic particle method, inspect using the "Inspection" portion of the "Accomplishment Instructions" and "Lower Splice Fitting Removal and Installation Instructions" in Ayres Corporation Service Bulletin No. SB-AG-39, dated September 17, 1996. Do the inspection following FAA Advisory Circular (AC) 43.13-1B, Chapter 5, Section 4, Magnetic Particle Inspection, using the wet particle method. You may obtain a copy of AC 43.13-1B at [http://www.faa.gov/regulations\\_policies/](http://www.faa.gov/regulations_policies/). Caution: Firmly support the wings during the inspection to prevent movement of the wing front lower spar caps when the splice blocks are removed. This will allow easier realignment of the splice block holes and the holes in the wing front lower spar cap for bolt insertion and prevent damage to the bolt hole. Damage to the bolt hole inner surface or edge of the bolt hole can cause cracks to begin prematurely.

(ii) The inspection must be done by or supervised by a Level 2 or Level 3 inspector certified following the guidelines in FAA AC 65-31A. You may obtain a copy of AC 65-31A at [http://www.faa.gov/regulations\\_policies/](http://www.faa.gov/regulations_policies/).

(iii) If using eddy current methods, a procedure must be sent to the FAA, Atlanta Aircraft Certification Office (ACO), for approval before doing the inspection. Send your proposed procedure to the FAA, Atlanta ACO, Attn: Cindy Lorenzen, 1701 Columbia Avenue, College Park, Georgia 30337. You are not required to remove the splice block for the eddy current inspections, unless corrosion is visible. Eddy current inspection procedures previously approved under AD 2006-07-15, AD 2003-07-01, AD 2000-11-16, AD 97-13-11, and/ or AD 97-17-03 remain valid for this AD.

(iv) If you change the inspection method used (magnetic particle or eddy current), the TIS intervals for repetitive inspections are based on the method used for the last inspection.

(3) If airplanes have not yet reached the threshold for the initial inspection required in AD 2006-07-15, initially inspect following the wing front lower spar cap hours total TIS schedule below or within the next 50 hours TIS after February 24, 2010 (the effective date of this AD), whichever occurs later:

**Table 2--Initial Inspection Times**

<b>Airplane Group</b>	<b>Initially inspect upon accumulating the following hours total TIS on the wing front lower spar cap</b>
(i) Group 1	2,000 hours TIS
(ii) Group 2	1,400 hours TIS
(iii) Group 3	6,400 hours TIS
(iv) Group 5	1,000 hours TIS
(v) Group 6	(A) S/N 5010R: 5,530 hours TIS (B) S/N 5038R: 5,900 hours TIS (C) S/N 5031R: 6,400 hours TIS (D) S/N 5047R: 6,400 hours TIS (E) S/N 5085R: 6,290 hours TIS
(vi) Any airplane with the entire Custom Kit CK-AG-41 installed	2,000 hours TIS

(4) Airplanes in all groups must meet the following conditions before doing the repetitive inspections required in paragraphs (i)(5), (i)(6), or (i)(7) of this AD:

(i) No cracks have been found previously on wing front lower spar cap; or

(ii) Small cracks have been repaired through cold work (or done as an option if never cracked) following Ayres Corporation Service Bulletin No. SB-AG-39, dated September 17, 1996; or

(iii) Small cracks have been repaired by reaming the 1/4-inch bolt hole to 5/16 inches diameter (or done as an option if never cracked) following Ayres Corporation Custom Kit No. CK-AG-29, Part I, dated December 23, 1997; or

(iv) Small cracks have been repaired through previous alternative methods of compliance (AMOC); or

(v) Small cracks have been repaired by installing Kaplan splice blocks, P/N 22515-1/-3 or P/N 88-251 (or done as an option if never cracked) following Quality Aerospace, Inc. Custom Kit No. CK-AG-30, dated December 6, 2001.

(5) Repetitively inspect Groups 1, 2, 3, and 6 airplanes that do not have ``big butterfly" plates and lower splice plates, P/Ns 20211-09 and 20211-11, installed following Ayres Corporation Custom Kit No. CK-AG-29, Part II, dated December 23, 1997; or that do not have ``big butterfly" plates and lower splice plates, P/Ns 94418-5 and 94418-7 or P/Ns 94418-13 and 94418-15, installed following Thrush Aircraft, Inc. Custom Kit No. CK-AG-41, Revision A, dated March 8, 2007; and meet the conditions in paragraph (i)(4) of this AD. Follow the wing front lower spar cap hours TIS compliance schedule below:

**Table 3--Repetitive Inspection Times for Airplane Groups 1, 2, 3, and 6 Without ``Big Butterfly" Plates and Lower Splice Plates**

When airplanes accumulate the following hours TIS on the wing front lower spar cap since the last inspection required in AD 2006-07-15,	Inspect within the following hours TIS after the effective date of this AD,	Inspect thereafter at intervals not to exceed...
(i) <u>Magnetic Particle inspection:</u>  (A) 350 or more hours TIS  (B) 175 through 349 hours TIS  (C) Less than 175 hours TIS	(A) 50 hours TIS  (B) 75 hours TIS  (C) upon accumulating 250 hours TIS	250 hours TIS
(ii) <u>Eddy Current inspection:</u>  (A) 500 or more hours TIS  (B) 275 through 499 hours TIS  (C) Less than 275 hours TIS	(A) 50 hours TIS  (B) 75 hours TIS  (C) upon accumulating 350 hours TIS	350 hours TIS

(6) Repetitively inspect Groups 1, 2, 3, 5, and 6 airplanes that have ``big butterfly" plates and lower splice plates, P/Ns 20211-09 and 20211-11, installed following Ayres Corporation Custom Kit No. CK-AG-29, Part II, dated December 23, 1997; or that have ``big butterfly" plates and lower splice plates, P/Ns 94418-5 and 94418- 7, or P/Ns 94418-13 and 94418-15, installed following Thrush Aircraft, Inc. Custom Kit No. CK-AG-41, Revision A, dated March 8, 2007; and meet the conditions in paragraph (i)(4) of this AD. Follow the wing front lower spar cap hours TIS compliance schedule below:

**Table 4--Repetitive Inspections Times for Airplane Groups 1, 2, 3, 5, and 6 With ``Big Butterfly" Plates and Lower Splice Plates**

<b>When airplanes accumulate the following hours TIS on the wing front lower spar cap since the last inspection required in AD 2006-07-15,</b>	<b>Inspect within the following hours TIS after the effective date of this AD,</b>	<b>Inspect thereafter at intervals not to exceed...</b>
(i) <u>Magnetic particle inspection:</u>  (A) 650 or more hours TIS  (B) 375 through 649 hours TIS  (C) Less than 375 hours TIS	(A) 50 hours TIS  (B) 75 hours TIS  (C) upon accumulating 450 hours TIS	450 hours TIS
(ii) <u>Eddy Current inspection:</u>  (A) 900 or more hours TIS  (B) 550 through 899 hours TIS  (C) Less than 550 hours TIS	(A) 50 hours TIS  (B) 75 hours TIS  (C) upon accumulating 625 hours TIS	625 hours TIS

Note 1: Group 5 airplanes had P/Ns 20211-09 and 20211-11 installed at the factory.

(7) Repetitively inspect airplanes that incorporate Thrush Aircraft, Inc. Custom Kit No. CK-AG-41, Revision A, dated March 8, 2007, in its entirety that meet the conditions in paragraph (i)(4) of this AD. Follow the wing front lower spar cap hours TIS compliance schedule below:

**Table 5--Repetitive Inspection Times for Airplanes With Thrush Aircraft, Inc. Custom Kit No. CK-AG-41, Revision A, Incorporated in Its Entirety**

<b>When using the following inspection methods,</b>	<b>Repetitively inspect at intervals not to exceed ...</b>
(i) Magnetic particle inspection	900 hours TIS
(ii) Eddy current inspection	1,250 hours TIS

(j) Initially replace the wing front lower spar caps, P/Ns 20207-1, 20207-2, 20207-11, 20207-12, 20207-13, 20207-14, 20207-15, or 20207-16, at the times specified in Table 6 of this AD. Repetitively replace thereafter at the life limit times specified in Table 7 of this AD. Do the replacements as specified in paragraph (l)(4) of this AD.

**Table 6--Initial Compliance Time for Wing Front Lower Spar Cap Replacement**

<b>Total Hours TIS on the wing front lower spar cap</b>	<b>Replace the wing front lower spar cap upon accumulating the following hours TIS on the spar cap after the effective date of this AD.</b>
(i) Group 1 with a radial engine and more than 15,000 hours TIS	500 hours
(ii) Group 1 with a radial engine and 12,000 to 15,000 hours TIS	1,000 hours
(iii) Group 1 with a radial engine and 9,000 to 11,999 hours TIS	1,500 hours
(iv) Group 1 with a radial engine and 7,400 to 8,999 hours TIS	2,000 hours
(v) Group 1 with a radial engine and less than 7,400 hours TIS	Use Table 7(xxii)
(vi) Group 1 with a turbine engine and more than 14,000 hours TIS	500 hours
(vii) Group 1 with a turbine engine and 11,000 to 14,000 hours TIS	1,000 hours
(viii) Group 1 with a turbine engine and 8,000 to 10,999 hours TIS	1,500 hours
(ix) Group 1 with a turbine engine and 4,200 to 7,999 hours TIS	2,000 hours
(x) Group 1 with a turbine engine and less than 4,200 hours TIS	Use Table 7(xxiii)
(xi) Group 2 with more than 9,000 hours TIS	500 hours
(xii) Group 2 with 6,000 to 9,000 hours TIS	1,000 hours
(xiii) Group 2 with 3,900 hours to 5,999 hours TIS	1,500 hours
(xiv) Group 2 with less than 3,900 hours TIS	Use Table 7(xxiv)
(xv) Group 3 and 6 with more than 28,800 hours TIS	500 hours
(xvi) Group 3 and 6 with 27,800 to 28,799 hours TIS	1,000 hours
(xvii) Group 3 and 6 with less than 27,800 hours TIS	Use Table 7(xxv)
(xviii) Group 5 with more than 8,000 hours TIS	500 hours
(xix) Group 5 with 5,000 to 7,999 hours TIS	1,000 hours
(xx) Group 5 with 2,400 to 4,999 hours TIS	1,500 hours
(xxi) Group 5 with less than 2,400 hours TIS	Use Table 7(xxvi)

**Table 7--Wing Front Lower Spar Cap Life Limits**

<b>Airplane Group</b>	<b>Replace wing front lower spar cap upon the accumulation of the following hours TIS on the spar cap:</b>
(xxii) Group 1 with a radial engine	9,400 hours TIS
(xxiii) Group 1 with a turbine engine	6,200 hours TIS
(xxiv) Group 2	5,400 hours TIS
(xxv) Groups 3 and 6	28,800 hours TIS

(xxvi) Group 5

3,900 hours TIS with original wing front lower spar cap P/N 20207-11 or P/N 20207-12  
5,400 hours TIS after original wing front lower spar cap has been replaced with any P/N 20207-xx wing front lower spar cap

Note 2: There is evidence of sharp, uneven edges on the spar cap bolt holes that resulted from the manufacturing process in Group 5 airplanes. Once the original wing front lower spar caps are replaced, the life limit increases.

(k) As previously stated in paragraph (f) of this AD, any Group 3 airplane that has been modified with a hopper of a capacity more than 410 gallons, a piston engine greater than 600 horsepower, or a gas turbine engine greater than 600 horsepower, is a Group 1 airplane for the purposes of this AD. Replace the wing front lower spar caps using the following formulas.

(1) For airplanes that were originally Group 3 airplanes and later modified by installing a piston engine of greater than 600 horsepower and/or a hopper capacity of greater than 410 gallons, calculate the equivalent Group 1 hours TIS on each spar cap as follows:

$$(i) \text{ Usage factor} = \frac{\text{Total hrs. on cap pre-mod.}}{28,800} + \frac{\text{Additional hrs. on cap post-mod.}}{9,400}$$

$$(ii) \text{ Equivalent Group 1 hours TIS} = 9,400 \times \text{Usage Factor}$$

(2) For airplanes that were originally Group 3 airplanes and later modified by installing a turbine engine of greater than 600 horsepower, with or without installing a hopper with greater than 410 gallon capacity, calculate the equivalent Group 1 hours TIS on each spar cap as follows:

$$(i) \text{ Usage factor} = \frac{\text{Total hrs. on cap pre-mod.}}{28,800} + \frac{\text{Additional hrs. on cap post-mod.}}{6,200}$$

$$(ii) \text{ Equivalent Group 1 hours TIS} = 6,200 \times \text{Usage Factor}$$

(3) When the equivalent Group 1 hours TIS on the wing front lower spar cap equals the life limit of 9,400 hours TIS if a radial piston engine is installed or reaches 6,200 hours TIS if a turbine engine is installed, the wing front lower spar cap must be replaced. Use Table 6 if over the life limit.

(4) See the appendix to this AD for examples of how to calculate the applicable life limit.

(1) If any cracks are found during any inspection required by this AD, you must repair the cracks or replace the wing front lower spar cap before further flight.

(1) Use the cold work process to ream out small cracks as defined in Ayres Corporation Service Bulletin No. SB-AG-39, dated September 17, 1996, and deburr the bolt hole edges with the splice blocks removed after cold work is performed; or

(2) If the crack is found in a 1/4-inch bolt hole, ream the 1/4-inch bolt hole to 5/16 inches diameter as defined in Part I of Ayres Corporation Custom Kit No. CK-AG-29, dated December 23, 1997; or

(3) Install Kaplan splice blocks, P/N 22515-1/3 or P/N 88-251, following Quality Aerospace, Inc. Custom Kit No. CK-AG-30, dated December 6, 2001; or

(4) Replace the affected wing front lower spar cap following an FAA-approved procedure. Contact the FAA at the address in paragraph (t) of this AD to obtain an FAA-approved replacement procedure unless previously provided by the manufacturer at delivery of the airplanes. An alternative to replacing just the affected wing front lower spar cap is to replace both wing front lower spar caps and the surrounding structure following Thrush Aircraft, Inc. Custom Kit No. CK-AG-41, Revision A, dated March 8, 2007. Another alternative to replacing just the affected wing front lower spar cap is to replace both wing front lower spar caps and the surrounding structure following Avenger Aircraft and Services FAA STC SA03654AT for Avenger Extended Performance Front Spar Enhancement Kit.

You may obtain a copy of FAA STC SA03654AT at [http://www.faa.gov/aircraft/air\\_cert/design\\_approvals/stc/](http://www.faa.gov/aircraft/air_cert/design_approvals/stc/). If you chose to install Thrush Custom Kit No. CK-AG-41, the FAA recommends installing Custom Kit No. CK-AG-41, Revision A, in its entirety although this is not mandatory. The additional structure provided in Thrush Aircraft, Inc. Custom Kit No. CK-AG-41, Revision A, dated March 8, 2007, will provide a greater level of safety than the minimum acceptable level of safety provided by replacing just the wing front lower spar cap. If choosing to install the Avenger FAA STC kit, it is mandatory to install the entire FAA STC kit.

(m) If a crack is found, the reaming associated with the cold work process may remove a crack if it is small enough. Some aircraft owners/operators were issued AMOCs with AD 97-17-03 to ream the 1/4-inch bolt hole to 5/16 inches diameter to remove small cracks. Ayres Corporation Custom Kit No. CK-AG-29, Part I, dated December 23, 1997, also provides procedures to ream the 1/4-inch bolt hole to 5/16 inches diameter, which may remove a small crack. Resizing the holes to the required size to install a Kaplan splice block may also remove small cracks. If you use any of these methods to remove cracks and the airplane is re-inspected before further flight and no cracks are found, you may continue to follow the repetitive inspection intervals for your airplane listed in paragraphs (i)(5), (i)(6), or (i)(7) of this AD.

(n) For all inspection methods (magnetic particle or eddy current), hours TIS for initial and repetitive inspection intervals and wing front lower spar cap life limit start over when the wing front lower spar cap is replaced with a new P/N 20207-1, 20207-2, 20207-11, 20207-12, 20207-13, 20207-14, 20207-15, or 20207-16. These wing front lower spar caps must be inspected as specified in paragraphs (i)(3), (i)(5), (i)(6), and (i)(7) of this AD.

(1) If the wings or wing front lower spar caps were replaced with new or used wings or wing front lower spar caps during the life of the airplane and the logbook records positively show the hours TIS of the replacement wings or wing front lower spar caps, then initially inspect at applicable times specified in paragraph (i)(3) of this AD. Repetitively inspect thereafter at intervals specified paragraphs (i)(5), (i)(6), or (i)(7) of this AD. Replace the wing front lower spar caps upon reaching the life limit specified in Table 7 of this AD.

(2) If the wings or wing front lower spar caps were replaced with new or used wings or wing front lower spar caps during the life of the airplane and logbook records do not positively show the hours

TIS of the replacement wings or wing front lower spar caps, then inspect within 50 hours TIS after February 24, 2010 (the effective date of this AD), unless already done. Repetitively inspect thereafter at intervals specified in paragraphs (i)(5), (i)(6), or (i)(7) of this AD. Replace the wing front lower spar caps within 500 hours TIS after February 24, 2010 (the effective date of this AD).

(3) If both wing front lower spar caps are replaced by installing the entire Thrush Aircraft, Inc. Custom Kit No. CK-AG-41, Revision A, dated March 8, 2007, then initially inspect at 2,000 hours TIS as shown in paragraph (i)(3) of this AD. Repetitively inspect thereafter at intervals specified in paragraph (i)(7) of this AD. Replace the wing front lower spar caps at times specified in paragraph (i)(8) of this AD.

(o) Any wing front lower spar cap that is removed and is at or beyond the replacement time specified in this AD must be disposed of following the procedures in 14 CFR Part 43.10.

(p) Replacement times start over when the wing front lower spar cap is replaced with a new P/N 20207-1, 20207-2, 20207-11, 20207-12, 20207-13, 20207-14, 20207-15, or 20207-16. These wing front lower spar caps are now life-limited parts and must be replaced upon the accumulation of the hours TIS specified in Table 7 of this AD.

(q) Report any cracks you find within 10 days after the cracks are found or within 10 days after February 24, 2010 (the effective date of this AD), whichever occurs later. Send your report to Cindy Lorenzen, Aerospace Engineer, ACE-115A, Atlanta ACO, 1701 Columbia Avenue, College Park, Georgia 30337; telephone: (404) 474-5524; facsimile: (404) 474-5606; e-mail: cindy.lorenzen@faa.gov. The Office of Management and Budget (OMB) approved the information collection requirements contained in this regulation under the provisions of the Paperwork Reduction Act and assigned OMB Control Number 2120-0056. Include in your report the following information:

(1) Aircraft model and serial number;

(2) Engine model;

(3) Aircraft hours TIS;

(4) Left and right wing front lower spar cap hours TIS;

(5) Hours TIS on the spar cap since last inspection;

(6) Crack location and size;

(7) Procedure (magnetic particle, ultrasonic, or eddy current) used for the last inspection;

(8) Description of any previous modifications and hours TIS when the modification was done, such as engine model change, installation of winglets, hopper capacity increase, cold working procedure done on bolt holes, installation of butterfly plates, or installation of Thrush Aircraft, Inc. Custom Kit No. CK-AG-41.

(r) Installation of the replacement wing front lower spar caps and other modification parts that are approved by FAA STC SA03654AT, Installation of Avenger Extended Performance Front Spar Enhancement Kit (new wing front spar lower caps, center splice and doublers), in accordance with Part II of Avenger Master Data List AAS-MDL-08-001, Revision B, dated November 26, 2008, terminates the actions required by this AD. The installation of FAA STC SA03654AT is an alternative to replacing the wing front lower spar caps with Ayres/Thrush wing front lower spar caps.

### **Special Flight Permits**

(s) Under 14 CFR part 39.23, we are limiting the special flight permits for this AD by the following conditions:

- (1) The hopper is empty;
- (2) Vne is reduced to 126 miles per hour (109 knots) indicated airspeed (IAS); and
- (3) Flight into known turbulence is prohibited.

### **Alternative Methods of Compliance (AMOCs)**

(t) The Manager, Atlanta Aircraft Certification Office, (ACO) FAA, ATTN: Cindy Lorenzen, Aerospace Engineer, ACE-115A, Atlanta ACO, 1701 Columbia Avenue, College Park, Georgia 30337; telephone: (404) 474-5524; facsimile: (404) 474-5606; e-mail: cindy.lorenzen@faa.gov; or William O. Herderich, Aerospace Engineer, ACE-117A, Atlanta ACO, 1701 Columbia Avenue, College Park, Georgia 30337; telephone: (404) 474-5547; facsimile: (404) 474-5606; e-mail: william.o.herderich@faa.gov, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. Before using any approved AMOC on any airplane to which the AMOC applies, notify your appropriate principal inspector (PI) in the FAA Flight Standards District Office (FSDO), or lacking a PI, your local FSDO.

(u) AMOCs approved for AD 2006-07-15, AD 2003-07-01, AD 2000-11-16, AD 97-13-11, and/or AD 97-17-03 are approved as AMOCs for this AD except for those pertaining to ultrasonic inspection methods.

### **Material Incorporated by Reference**

(v) You must use Ayres Corporation Service Bulletin No. SB-AG-39, dated September 17, 1996; Ayres Corporation Custom Kit No. CK-AG-29, dated December 23, 1997; Quality Aerospace, Inc. Custom Kit No. CK-AG-30, dated December 6, 2001; Thrush Aircraft, Inc. Custom Kit No. CK-AG-41, Revision A, dated March 8, 2007; and Part II of Avenger Master Data List AAS-MDL-08-001, Revision B, dated November 26, 2008, to do the actions required by this AD, unless the AD specifies otherwise.

(1) The Director of the Federal Register approved the incorporation by reference of Thrush Aircraft, Inc. Custom Kit No. CK-AG-41, Revision A, dated March 8, 2007, and Part II of Avenger Master Data List AAS-MDL-08-001, Revision B, dated November 26, 2008, under 5 U.S.C. 552(a) and 14 CFR part 51.

(2) On May 20, 2003 (68 FR 15653), the Director of the Federal Register approved the incorporation by reference of Quality Aerospace, Inc. Custom Kit No. CK-AG-30, dated December 6, 2001.

(3) On July 25, 2000 (65 FR 36055), the Director of the Federal Register approved the incorporation by reference of Ayres Corporation Service Bulletin No. SB-AG-39, dated September 17, 1996; and Ayres Corporation Custom Kit No. CK-AG-29, dated December 23, 1997.

(4) For service information identified in this AD, contact Thrush Aircraft, Inc., 300 Old Pretoria Road, P.O. Box 3149, Albany, Georgia 31706-3149, Internet: <http://www.thrushaircraft.com>. To obtain information about Avenger Master Data List AAS-MDL-08-001 and the optional installation of FAA STC SA03654AT, contact Avenger Aircraft and Services, 103 N. Main Street, Suite 106, Greenville, South Carolina 29601, Internet: <http://www.avengeraircraft.com>.

(5) You may review copies of the service information incorporated by reference for this AD at the FAA, Central Region, Office of the Regional Counsel, 901 Locust, Kansas City, Missouri 64106. For information on the availability of this material at the Central Region, call (816) 329-3768.

(6) You may also review copies of the service information incorporated by reference for this AD at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call (202) 741-6030, or go to: [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

### **Appendix to AD 2009-26-11**

The following are examples of calculating equivalent Group 1 hours.

Example 1: S/N xxx was originally a Group 3 airplane; later it was modified with a Wright R-1820-71, 1200 horsepower, radial engine when the wing front lower spar caps had 15,700 hours TIS on them. The wing front lower spar caps have accumulated an additional 8,200 hours since the engine conversion for a total of 23,900 hours TIS on the wing front lower spar caps.

$$\text{Usage Factor} = 15,700 \text{ hours}/28,800 + 8,200 \text{ hours}/9,400 = 1.417$$
$$\text{Equivalent Group 1 hours} = 9,400 \times 1.417 = 13,320 \text{ hours.}$$

The wing front lower spar caps will need to be replaced within the next 1,000 hours TIS after the effective date of this AD as determined by Table 6 for a Group 1 airplane with a radial engine with between 12,000 and 15,000 hours TIS.

Example 2: S/N yyy was originally a Group 3 airplane; later it was modified with a PT6A-34, 750 horsepower, turbine engine when the wing front lower spar caps had 5,300 hours TIS on them. The wing front lower spar caps now have 7,700 hours TIS.

$$\text{Usage Factor} = 5,300 \text{ hours}/28,800 + (7,700 - 5,300)/6,200 = 0.571$$
$$\text{Equivalent Group 1 hours} = 6,200 \times 0.571 = 3,540 \text{ hours.}$$

The wing front lower spar caps will need to be replaced at 6,200 equivalent Group 1 total hours TIS, which is within the next 2,660 hours TIS (6,200 - 3,540 = 2,660).