

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 2001-CE-36-AD; Amendment 39-12766; AD 2002-11-05]

RIN 2120-AA64

Airworthiness Directives; Air Tractor, Inc. Models AT-400, AT-401, AT-401B, AT-402, AT-402A, AT-402B, AT-501, AT-802, and AT-802A Airplanes

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule.

SUMMARY: This amendment supersedes Airworthiness Directive (AD) 2001-10-04 R1, which lowered the safe life for the wing lower spar cap on certain Air Tractor, Inc. (Air Tractor) AT-400, AT-500, and AT-800 series airplanes. AD 2001-10-04 R1 resulted from numerous reports of cracks in the 3/8-inch bolthole of the wing lower spar cap on the affected airplanes. This AD retains the safe life for the wing lower spar cap and requires you to eddy-current inspect the wing lower spar cap immediately prior to the replacement/modification in order to detect and correct any crack in a bolthole before it extends to the modified center section of the wing. This AD further reduces the safe life for certain Models AT-401, AT-401B, AT-402, AT-402A, AT-402B, and AT-501 airplanes that incorporate or have incorporated Marburger Enterprises, Inc. winglets and removes the Models AT-502, AT-502A, AT-502B, and AT-503A airplanes from the applicability. We are issuing another AD action to cover these airplanes. The actions specified by this AD are intended to prevent fatigue cracks from occurring in the wing lower spar cap before the established safe life is reached. Fatigue cracks in the wing lower spar cap, if not detected and corrected, could result in the wing separating from the airplane during flight.

DATES: This AD becomes effective on July 12, 2002.

The Director of the Federal Register previously approved the incorporation by reference of certain publications listed in the regulation as of June 8, 2001 (66 FR 27014, May 16, 2001).

ADDRESSES: You may get the service information referenced in this AD from Air Tractor, Incorporated, P.O. Box 485, Olney, Texas 76374; or Marburger Enterprises, Inc., 1227 Hillcourt, Williston, North Dakota 58801; telephone: (800) 893-1420 or (701) 774-0230; facsimile: (701) 572-2602. You may view this information at the Federal Aviation Administration (FAA), Central Region, Office of the Regional Counsel, Attention: Rules Docket No. 2001-CE-36-AD, 901 Locust, Room 506, Kansas City, Missouri 64106; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

FOR FURTHER INFORMATION CONTACT: Direct all questions to:

–For airplanes that do not incorporate and never have incorporated Marburger Enterprises, Inc. winglets: Rob Romero, Aerospace Engineer, FAA, Fort Worth Airplane Certification Office, 2601 Meacham Boulevard, Fort Worth, Texas 76193-0150; telephone: (817) 222-5102; facsimile: (817) 222-5960; and

–For certain Models AT-402, AT-402A, AT-402B, and AT-501 airplanes that incorporate or have incorporated Marburger Enterprises, Inc. winglets: John Cecil, Aerospace Engineer, Los Angeles Aircraft Certification Office, FAA, 3960 Paramount Boulevard, Lakewood, California 90712; telephone: (562) 627-5228; facsimile: (562) 627-5210.

SUPPLEMENTARY INFORMATION:

Discussion

Has FAA Taken Any Action to This Point?

Several reports of cracked wing lower spar caps on Air Tractor AT-500 series airplanes caused the manufacturer (Air Tractor) to recalculate the fatigue life of the wing lower spar cap on Air Tractor AT-400, AT-500, and AT-800 series airplanes. One report was of an accident where the wing separated from the airplane during flight. The cracks are originating in the outboard 3/8-inch bolthole of the wing lower spar cap. To address this condition, FAA issued AD 2001-10-04, Amendment 39-12230 (66 FR 27014, May 16, 2001), to lower the safe life for the wing lower spar cap on Air Tractor AT-400, AT-500, and AT-800 series airplanes.

AD 2001-10-04 also allowed for inspection, using eddy current methods, of the wing lower spar cap for airplanes that are at or over the lower safe life and parts are not available. Operation of the airplane was not allowed if cracks were found and inspections had to be terminated when parts become available or after three repetitive inspections were done.

AD 2001-10-04 superseded AD 2000-14-51, Amendment 39-11837 (65 FR 46567, July 31, 2000). AD 2000-14-51 required inspection of the wing lower spar cap for cracks on Air Tractor Models AT-501, AT-502, and AT-502A airplanes, and modification or replacement of any cracked wing lower spar cap.

We inadvertently included certain AT-800 series airplanes in the Applicability of AD 2001-10-04. The AD should not have affected the AT-800 series airplanes equipped with the factory-supplied part number 80540 computerized fire gate. Therefore, we revised AD 2001-10-04 to incorporate this change. AD 2001-10-04 R1, Amendment 39-12247, was published in the Federal Register on June 4, 2001 (66 FR 29900).

What Has Happened Since AD 2001-10-04 R1 To Initiate This Action?

In response to AD 2001-10-04 R1, FAA received a comment from the National Transportation Safety Board that recommended an eddy-current inspection requirement immediately prior to the accomplishment of the two-part modification described in Snow Engineering Service Letters #202 or #203, both Revised March 26, 2001, as applicable. This is to eliminate the possibility that a crack existing in a bolt hole prior to the modification is still present after accomplishing the modification. Prior to the modification, any crack present will be larger than it would appear after the outermost bolt holes are enlarged. This makes the crack easier to detect and gives the mechanic an area to concentrate on any post-modification inspections.

Additional analysis also indicates a higher wing root bending moment, which reveals the need to further reduce the safe life for certain AT-400 and AT-500 series airplanes with a certain configuration. Airplanes with this configuration either incorporate or have incorporated Marburger Enterprises, Inc. winglets on the wing lower spar cap. These winglets are installed in accordance with Supplemental Type Certificate (STC) SA00490LA. We have developed criteria for determining what the new safe life will be for airplanes that either incorporate or have incorporated these winglets.

What Is The Potential Impact if FAA Took No Action?

This condition could result in fatigue cracks in the wing lower spar cap before the established safe life is reached. Fatigue cracks in the wing lower spar cap, if not detected and corrected, could result in the wing separating from the airplane during flight.

Has FAA Taken Any Action to This Point?

We issued a proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an AD that would apply to certain Air Tractor, Inc. (Air Tractor) AT-400, AT-500, and AT-800 series airplanes. This proposal was published in the Federal Register as a notice of proposed rulemaking (NPRM) on December 27, 2001 (66 FR 66823). The NPRM proposed to supersede AD 2001-10-04 R1 with a new AD that would retain the safe life and would require you to eddy-current inspect the wing lower spar cap immediately prior to the replacement/modification in order to detect and correct any crack in a bolthole before it extends to the modified center section of the wing. The NPRM also proposed to further reduce the safe life for AT-400 and AT-500 series airplanes that incorporate or have incorporated Marburger Enterprises, Inc. winglets.

Was the Public Invited To Comment on the NPRM?

The FAA encouraged interested persons to participate in the making of this amendment. In addition to the comments, we received reports of several cracks originating in the outboard 3/8-inch hole of the main spar lower cap on Air Tractor Models AT-502, AT-502A, AT-502B, and AT-503A airplanes at hours time-in-service (TIS) lower than the established safe life.

Based on this information, we have determined that:

- The safe life on Models AT-502, AT-502A, AT-502B, and AT-503A airplanes should be further reduced;
- These airplanes should be removed from the NPRM; and
- Final rule; request for comments (immediately adopted rule) AD action should be taken to address this condition.

We received one comment in favor of the NPRM as written. The following presents other comments received on the proposal and FAA's response to each comment:

Comment Issue No. 1: Change Step 8 of the Winglet Calculation

What Is the Commenter's Concern?

Several commenters state that Step 8 of the Appendix to the proposed AD gives an overly conservative safe life for airplanes with the Marburger winglets installed when compared to that recommended by Air Tractor. The commenters recommend that FAA revise this calculation to be more in line with Air Tractor's recommendation.

What Is FAA's Response to the Concern?

After further evaluating this step in the calculation, we concur that Step 8 results in a more conservative safe life than we intended. We have modified these instructions for computing the safe life of the airplanes with the winglets installed. These modified instructions are included in the Appendix to this AD.

The accomplishment of these instructions will provide an increase in the safe life of the affected airplanes over that proposed in the NPRM. Therefore, the burden upon the public is reduced and there is no regulatory requirement for FAA to solicit additional public comments.

Comment Issue No. 2: Allow Repetitive Inspections Instead of Mandatory Modification

What Is the Commenter's Concern?

One commenter recommends repetitive inspections provided no cracks are found instead of mandatory modification as proposed in the NPRM and required by AD 2001-10-04 R1. The commenter states that this would reduce the economic impact on operators and minimize the risk of reduced agricultural production if the safe life limit is reached during the agricultural spraying season.

What Is FAA's Response to the Concern?

Although we concur that repetitive inspections may reduce the economic impact and minimize the risk of reduced agricultural production, this will not meet the safety intent of the AD. The FAA has determined that reliance on critical repetitive inspections carries an unnecessary safety risk when parts replacement or modifications exist. In determining what inspections are critical, FAA considers (1) the safety consequences of the airplane if the known problem is not detected by the inspection; (2) the reliability of the inspection such as the probability of not detecting the known problem; (3) whether the inspection area is difficult to access; and (4) the possibility of damage to an adjacent structure as a result of the problem.

We have included a provision for an alternative method of compliance that allows for repetitive 400-hour time-in-service (TIS) inspections up to 1,200 hours TIS after the safe life limit is reached. However, the replacement/modification must be scheduled. This will allow operators to continue operating during the agricultural spraying season.

We have not changed the final rule AD based on this comment.

Comment Issue No. 3: Incorporate One or More Proposed Options Instead of the Required Life Limits for Airplanes with Winglets

What Is the Commenter's Concern?

One commenter opposes the required life limits for the affected airplanes with Marburger winglets installed because the commenter believes that there are other alternatives. The commenter believes that accomplishing one or more of the following options will meet the safety intent of the AD for those affected airplanes with winglets installed:

- Require a takeoff weight limitation that would include a placard and airplane flight manual changes. This weight reduction would offset increased wing bending moments due to the winglet installation;

- Place a maximum maneuver load factor limit (n_z) limitation to reduce the maximum wing bending moment and alleviate the effects of the winglet installation;

- Incorporate a damage tolerance-based inspection program. This program could be based on the initial inspection and subsequent 400-hour TIS inspections detailed in the alternative method of compliance in AD 2001-10-04 R1 and the NPRM and the Snow Engineering service letters; and/or
- Incorporate an inspection program and allow cold-working or reaming of the area where small cracks are found. The inspections could be based on the initial inspection and subsequent 400-hour TIS inspections detailed in the alternative method of compliance in AD 2001-10-04 R1 and the NPRM and specified in the Snow Engineering service letters.

What Is FAA's Response to the Concern?

We do not concur with incorporating any of these alternatives for the following reasons:

- Takeoff weight limitation: The FAA has determined that a weight placard limitation is not a reliable method of reducing wing root bending in airplanes utilized in CAM 8 operations. CAM 8 allows for the operation of restricted category agricultural airplanes at weights higher than that specified in the type certification data sheet (TCDS). To effectively alleviate fatigue spectrum loading, any weight limitation must reduce the typical or average weight seen in operation. We have determined that a maximum weight placard will not reliably reduce the fatigue spectrum loading the CAM 8 agricultural operations;
- Maximum Maneuver Load Factor Limits (n_z): These limits would have little effect on the fatigue loading spectrum seen in operation. Fatigue damage accumulates due to maneuvering, gusts, and ground load occurrences. The ground-air-ground cycle also contributes to fatigue damage. The aerial application spectrum displayed in DOT/FAA/CT-91-20 "General Aviation Aircraft–Normal Acceleration Data Analysis and Collection Project" shows only one occurrence of limit load factor in every 16,500 nautical miles flown. It also shows only one occurrence of 90 percent of limit load factor in every 3,300 nautical miles flown. Based on this, we have determined that reducing the maximum maneuver limit load factor would affect only a small percentage of fatigue damage and would not appreciably affect the fatigue safe life;
- Damage tolerance-based inspection program: Damage tolerance and service history-based inspection programs are acceptable methods to ensure continuing structural integrity. However, the commenter does not provide adequate substantiating data to justify an inspection-based system instead of the proposed safe life approach. Such a program should include a detailed crack growth analysis with a threshold or initial inspection time and repetitive inspection intervals. Such intervals would be based on the crack growth analysis. Service history-based inspection programs should be based on an extensive review and statistical analysis of the existing fleet's service experience. The commenter provides no substantiating data and refers only to the inspections proposed in the NPRM and required by AD 2001-10-04 R1. These inspections are limited in duration and used only to provide relief in the event that repair or replacement parts are not available; and
- Repair small cracks through cold-working or reaming the affected area: This is already allowed in limited capacity. Snow Engineering Service Letter #197, which is referenced in the NPRM, specifies drilling the bolt hole to the next larger size if a crack is detected during the eddy-current inspection. If a crack is still detected after the hole is drilled to the next larger size, the service bulletin specifies replacing the cracked part. The FAA infers that the commenter wants this concept used with an inspection program instead of the mandatory safe life modification/replacement program. As previously discussed, this would not meet the safety intent of the AD.

We have not changed the final rule (after NPRM) AD based on this comment.

Comment Issue No. 4: Modify the Winglet Usage Factor for Certain Model AT-502A Airplanes

What Is the Commenter's Concern?

One commenter states that certain Model AT-502A airplanes are equipped with a modification commonly known as the "Hoerner Tip." The commenter suggests that FAA change the winglet usage factor for these airplanes.

What Is FAA's Response to the Concern?

We concur. Later serial numbers of the Model AT-502A airplanes should have a lower winglet usage factor. As discussed earlier, we are initiating final rule; request for comments (immediately adopted rule) AD action to further reduce the safe life of the Models AT-502, AT-502A, AT-502B, and AT-503A airplanes. We will take the commenter's concern into consideration when preparing this AD.

We have not changed the final rule (after NPRM) AD based on this comment.

Comment Issue No. 5: Reduce Winglet Usage Factor for All Airplanes

What Is the Commenter's Concern?

One commenter recommends that FAA reduce the winglet usage factor for all airplanes. This recommendation is based on the weight usage penalty used on Dromader M-18 airplanes compared to the winglet usage factors on the affected Air Tractor airplanes.

What Is FAA's Response to the Concern?

We do not concur. We extensively reviewed the safe life limits specified in the Snow Engineering service letters along with the substantiating engineering analysis. We are confident in Air Tractor's relative analysis between the baseline airplanes and those modified with the Marburger winglet STC.

Relative fatigue life comparisons between different airplane models are difficult when the airplanes operate in different regions of the fatigue S-N curve, especially when even later serial numbers of the same model may operate at different stress levels. Relative comparisons based on ratios (as the commenter performed) assume a linear or "one-to-one" relationship between operating stress and fatigue life. When the operating stress of the two airplanes is significantly different, this "one-to-one" relationship assumption is inaccurate.

We have not changed the final rule (after NPRM) AD based on this comment.

Comment Issue No. 6: Use Configuration Changes To Reduce the Aerodynamic Effect of the Winglet Installation

What Is the Commenter's Concern?

One commenter suggests using airplane configuration changes to reduce the aerodynamic effect of the winglet installation and increase the inertia relief available from the winglet installation. This includes winglet incidence, flap droop, and ballast weight in the winglet to offset the increased wing bending moments due to the winglet installation.

What Is FAA's Response to the Concern?

While we acknowledge that configuration changes may successfully offset the effect of the winglet installation on the wing bending moments, the commenter provides no engineering data to specifically show the changes and substantiate reduced aerodynamic effect. The commenter may send this information to FAA at any time for consideration of an alternative method of compliance to the AD.

FAA's Determination

What Is FAA's Final Determination on This Issue?

After careful review of all available information related to the subject presented above, we have determined that air safety and the public interest require the adoption of the rule as proposed except for the change in the winglet safe life calculation, the removal of certain airplanes from the applicability, and minor editorial corrections. We have determined that the change, removal, and minor corrections:

- Provide the intent that was proposed in the NPRM for correcting the unsafe condition; and
- do not add any additional burden upon the public than was already proposed in the NPRM.

Cost Impact

How Many Airplanes Does This AD Impact?

We estimate that this AD affects 1,179 airplanes in the U.S. registry.

What Is the Cost Impact of This AD on Owners/Operators of the Affected Airplanes?

We estimate the following costs to accomplish the inspection:

Labor cost	Parts cost	Total cost per airplane	Total cost on U.S. operators
2 workhours at \$60 per hour = \$120	No parts required for inspection	\$120	\$141,480

We estimate the following costs to accomplish the replacement/modification:

Labor cost	Parts cost	Total cost per airplane	Total cost on U.S. operators
120 workhours at \$60 per hour = \$7,200	\$4,300	\$11,500	\$13,558,500

What Is the Difference Between the Cost Impact of This AD and the Cost Impact of AD 2001-10-04 R1?

AD 2001-10-04 R1 already established the safe life for the lower wing spar cap on the affected airplanes. Therefore, the replacement/modification is already required through that AD. The only difference in the cost impact upon the public of this AD and AD 2001-10-04 R1 is the cost for the eddy-current inspection upon replacement and the further safe life reduction for those AT-400 and AT-500 series airplanes that incorporate or have incorporated Marburger Enterprises, Inc. winglets.

Regulatory Impact

Does This AD Impact Various Entities?

The regulations adopted herein 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. Therefore, it is determined that this final rule does not have federalism implications under Executive Order 13132.

Does This AD Involve a Significant Rule or Regulatory Action?

For the reasons discussed above, I certify that this action (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); and (3) 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. A copy of the final evaluation prepared for this action is contained in the Rules Docket. A copy of it may be obtained by contacting the Rules Docket at the location provided under the caption ADDRESSES.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (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.

Sec. 39.13 [Amended]

2. FAA amends Sec. 39.13 by removing Airworthiness Directive (AD) 2001-10-04 R1, Amendment 39-12247 (66 FR 29900, June 4, 2001), and by adding a new AD to read as follows:

AIRWORTHINESS DIRECTIVE



Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
**Federal Aviation
Administration**

We post ADs on the internet at "www.airweb.faa.gov/rgl"

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

2002-11-05 Air Tractor, Inc.: Amendment 39-12766; Docket No. 2001-CE-36-AD.

(a) *What airplanes are affected by this AD?* This AD applies to certain Models AT-400, AT-401, AT-401B, AT-402, AT-402A, AT-402B, AT-501, AT-802, and AT-802A airplanes. Use paragraph (a)(1) of this AD for affected airplanes that do not incorporate and never have incorporated winglets. Use paragraph (a)(3) of this AD for certain Models AT-401, AT-401B, AT-402, AT-402A, AT-402B, and AT-501 airplanes that incorporate or have incorporated Marburger Enterprises, Inc. winglets.

(1) The following presents airplanes (certificated in any category) that are affected by this AD, along with the new safe life (presented in hours time-in-service (TIS)) of the wing lower spar cap for all affected airplane models and serial numbers:

Model	Serial numbers	Safe life
AT-400	all serial numbers beginning with 0416	13,300 hours TIS.
AT-401	0662 through 0951	10,757 hours TIS.
AT-401B	0952 through 1014 and 1016 through 1020	6,948 hours TIS.
AT-401B	1015 and 1021 through 1124	7,777 hours TIS.
AT-402	0694 through 0951	7,440 hours TIS.
AT-402A	0738 through 0951	7,440 hours TIS.
AT-402A	0952 through 1020	4,589 hours TIS.
AT-402A	1021 through 1124	5,268 hours TIS.
AT-402B	0966 through 1020	4,589 hours TIS.
AT-402B	1021 through 1124	5,268 hours TIS.
AT-501	0002 through 0061	4,531 hours TIS.
AT-501	all serial numbers beginning with 0062	7,693 hours TIS.
AT-802	0001 through 0059 except those equipped with the factory-supplied part number 80540 computerized fire gate.	4,132 hours TIS.
AT-802	0060 through 0091 except those equipped with the factory-supplied part number 80540 computerized fire gate.	4,188 hours TIS.
AT-802	0092 through 0101 except those equipped with the factory-supplied part number 80540 computerized fire gate.	8,163 hours TIS.
AT-802A	0003 through 0059 except those equipped with the factory-supplied part number 80540 computerized fire gate.	4,969 hours TIS.
AT-802A	0060 through 0091 except those equipped with the factory-supplied part number 80540 computerized fire gate.	4,531 hours TIS.
AT-802A	0092 through 0101 except those equipped with the factory-supplied part number 80540 computerized fire gate.	8,648 hours TIS.

Note 1: This AD still applies to those airplanes that have converted between fire fighting and agricultural dispersal.

(2) If piston powered aircraft have been converted to turbine power, you must use the limits for the corresponding serial number turbine-powered aircraft.

(3) The following presents airplanes (certificated in any category) that could incorporate or could have incorporated Marburger Enterprises, Inc. winglets. These winglets are installed in accordance with Supplemental Type Certificate (STC) SA00490LA. Use the winglet usage factor in the table in this paragraph, the safe life specified in paragraph (a)(1) of this AD, and the instructions included in the Appendix to this AD to determine the new safe life of these airplanes:

Model	Serial numbers	Winglet usage factor
AT-401	0662 through 0951	1.6
AT-401B	0952 through 1014 and 1016 through 1020	1.1
AT-401B	1015 and 1021 through 1124	1.1
AT-402	0694 through 0951	1.6
AT-402A	0738 through 0951	1.6
AT-402A	0952 through 1020	1.1
AT-402A	1021 through 1124	1.1
AT-402B	0966 through 1020	1.1
AT-402B	1021 through 1124	1.1
AT-501	0002 through 0061	1.6
AT-501	all serial numbers beginning with 0062	1.6

(b) *Who must comply with this AD?* Anyone who wishes to operate any of the airplanes identified in paragraph (a) of this AD must comply with this AD.

(c) *What problem does this AD address?* The actions specified by this AD are intended to prevent fatigue cracks from occurring in the wing lower spar cap before the established safe life is reached. Fatigue cracks in the wing lower spar cap, if not detected and corrected, could result in the wing separating from the airplane during flight.

Note 2: The 10-hour TIS compliance time is maintained from AD 2001-10-04 R1.

(d) *What must I do to address this problem?* To address this problem, you must accomplish the following actions:

Actions	Compliance	Procedures
(1) Modify the applicable aircraft records (logbook) as follows to show the reduced safe life for the wing lower spar cap (use the information from the table in paragraph (a)(1) of this AD and utilize the information in paragraph (a)(3) of this AD and the Appendix to this AD, as applicable. (i) For the affected Models AT-802 and AT-802A airplanes: update the Owners Manual, Section 6—Airworthiness Limitations, Life Limited Parts. (ii) For all affected airplanes other than Models AT-802 and AT-802A airplanes, incorporate the following into the Aircraft Logbook: “In accordance with this AD, the wing lower spar cap is life limited to ____.” Insert the applicable safe life number from the applicable tables in paragraphs (a)(1) and (a)(3) and the Appendix of this AD. (iii) If, as of the time of the logbook entry requirement of paragraph (d)(1) of this AD, your airplane is over or within 10 hours of the safe life, an additional 10 hours TIS is allowed to accomplish the replacement/modification.	Accomplish the logbook entry within the next 10 hours TIS after July 12, 2002 (the effective date of this AD).	The owner/operator holding at least a private pilot certificate as authorized by section 43.7 of the Federal Aviation Regulations (14 CFR 43.7) may modify the aircraft records as specified in paragraphs (d)(1)(i) and (d)(1)(ii) of this AD. Make an entry into the aircraft records showing compliance with this portion of the AD in accordance with section 43.9 of the Federal Aviation Regulations (14 CFR 43.9). Accomplish the actual replacement/modification when the safe life is reached in accordance with Snow Engineering Service Letter #202 or #203, both Revised March 26, 2001, as applicable. The owner/operator may not accomplish the replacement/modification, unless he/she holds the proper mechanic authorization.
(2) If you have ordered parts from the factory when it is time to replace the wing lower spar cap (as required when you reach the established safe life), but the parts are not available, you may eddy-current inspect the wing lower spar cap. These inspections are allowed until one of the following occurs, at which time the replacement/modification must be accomplished: (i) Crack(s) is/are found; (ii) Parts become available from the manufacturer; or	Inspect prior to further flight after ordering the parts and thereafter at intervals not to exceed 400 hours TIS until one of the criteria in Paragraphs (d)(2)(i), (d)(2)(ii), and (d)(2)(iii) of this AD are met.	In accordance with the procedures in Snow Engineering Service Letter #202 or #203, both Revised March 26, 2001, as applicable.

(iii) Not more than three inspections or 1,200 hours TIS go by: the first inspection would have to be accomplished upon accumulating the safe life; the second inspection would have to be accomplished within 400 hours TIS after accumulating the safe life; the third inspection would have to be accomplished 400 hours TIS after the second inspection; and the replacement/modification would have to be accomplished within 400 hours TIS after the third inspection (maximum elapsed time would be 1,200 hours TIS).

(3) Eddy-current inspect the wing lower spar cap in order to detect any crack before it extends to the modified center section of the wing and repair that crack or replace the wing section. This replacement must be accomplished by a Level 2 or Level 3 inspector that is certified for eddy-current inspection using the guidelines established by the American Society for Nondestructive Testing or MIL-STD-410. The inspection must be accomplished by one of the following:

(i) a Level 2 or Level 3 inspector that is certified for eddy-current inspection using the guidelines established by the American Society for Nondestructive Testing or MIL-STD-410; or

(ii) A person authorized to perform AD work who has completed and passed the Air Tractor, Inc. training course on Eddy Current Inspection on wing lower spar caps.

Immediately prior to the replacement/modification required when you reach the new safe life. For airplanes that had this replacement/modification accomplished in accordance with either AD 2001-10-04 or AD 2001-10-04 R1, accomplish this inspection and any necessary corrective action within the next 400 hours TIS after July 12, 2002 (the effective date of this AD), unless already accomplished (have the mechanic who accomplished the work mark the logbook accordingly).

In accordance with the procedures in Snow Engineering Service Letter #202 or #203, both Revised March 26, 2001, as applicable.

(e) Can I comply with this AD in any other way?

(1) You may use an alternative method of compliance or adjust the compliance time if:

(i) Your alternative method of compliance provides an equivalent level of safety; and

(ii) The Manager, Fort Worth or Los Angeles Airplane Certification Office (ACO), as applicable, approves your alternative. Submit your request through an FAA Principal Maintenance Inspector. The inspector may add comments before sending it to the Manager, Fort Worth or Los Angeles ACO.

(2) Alternative methods of compliance approved for AD 2001-10-04 and/or AD 2000-14-51 are not considered approved for this AD.

(3) Alternative methods of compliance approved for AD 2001-10-04 R1 are considered approved for this AD.

Note 3: This AD applies to each airplane identified in paragraphs (a)(1) and (a)(3) of this AD, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For airplanes that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (e) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if you have not eliminated the unsafe condition, specific actions you propose to address it.

(f) *Are there any alternative methods of compliance already approved or being considered for this AD?* The FAA may approve, as an alternative method of compliance, inspection of the wing lower spar cap. You must submit the request in accordance with the procedures in paragraph (e) of this AD and adhere to the following:

(1) If you are over or within 10 hours TIS of the safe life for the wing lower spar cap and you have ordered parts and scheduled a date for the replacement/modification, but having the replacement/modification done on this date grounds the airplane, accomplish the following:

(i) Inspect the wing lower spar cap within 10 hours TIS after approval of the alternative method of compliance;

(ii) Reinspect thereafter at intervals not to exceed 400 hours TIS until either cracks are found, the date of the scheduled replacement/modification occurs, or 1,200 hours TIS after the initial inspection are accumulated, whichever occurs first; and

(iii) Accomplish the inspections in accordance with the procedures in Snow Engineering Service Letter #202 or #203, both Revised March 26, 2001, as applicable.

(2) Submit the following to the Fort Worth or Los Angeles ACO, as applicable, using the procedures described in paragraph (e) of this AD:

(i) The airplane model serial number designation, and airplane registration number (N-number);

(ii) The number of hours TIS on the airplane;

(iii) The scheduled date for the replacement/modification; and

(iv) The name and location of the authorized repair shop.

(3) For more information about this issue, contact:

(i) For the airplanes that do not incorporate and never have incorporated Marburger Enterprises, Inc. winglets: Rob Romero, Aerospace Engineer, FAA, Fort Worth Airplane Certification Office, 2601 Meacham Boulevard, Fort Worth, Texas 76193-0150; telephone: (817) 222-5102; facsimile: (817) 222-5960; and

(ii) For the airplanes that incorporate or have incorporated winglets: John Cecil, Aerospace Engineer, Los Angeles Aircraft Certification Office, FAA, 3960 Paramount Boulevard, Lakewood, California 90712; telephone: (562) 627-5228; facsimile: (562) 627-5210.

(g) *What if I need to fly the airplane to another location to comply with this AD?* The FAA can issue a special flight permit under sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate your airplane to a location where you can accomplish the requirements of this AD provided that the following is adhered to:

(1) Only operate in day visual flight rules (VFR) only.

(2) Ensure that the hopper is empty.

(3) Limit airspeed to 135 miles per hour (mph) indicated airspeed (IAS).

(4) Avoid any unnecessary g-forces.

(5) Avoid areas of turbulence.

(6) Plan the flight to follow the most direct route.

(h) *Are any service bulletins incorporated into this AD by reference?* Replacement and inspection actions required by this AD must be done in accordance with Snow Engineering Service Letter #202 or 203, both Revised March 26, 2001, as applicable. The Director of the Federal Register previously approved this incorporation by reference under 5 U.S.C. 552(a) and 1 CFR part 51, as of June 8, 2001 (66 FR 27014, May 16, 2001). You can get copies from Air Tractor, Incorporated, P.O. Box 485, Olney, Texas 76374; or Marburger Enterprises, Inc., 1227 Hillcourt, Williston, North Dakota 58801. You can look at copies at the FAA, Central Region, Office of the Regional Counsel, 901 Locust, Room 506, Kansas City, Missouri, or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

(i) *Does this AD action affect any existing AD actions?* This amendment supersedes AD 2001-10-04 R1, Amendment 39-12247.

(j) *When does this amendment become effective?* This amendment becomes effective on July 12, 2002.

Appendix to AD 2002-11-05

The following provides procedures for determining the safe life for those Models AT-401, AT-401B, AT-402, AT-402A, AT-402B, and AT-501 airplanes that incorporate or have incorporated Marburger Enterprises, Inc. winglets. These winglets are installed in accordance with Supplemental Type Certificate (STC) SA00490LA.

What if I removed the Marburger winglets prior to further flight after the effective date of this AD or prior to the effective date of this AD:

1. Review your airplane's logbook to determine your airplane's time in service (TIS) with winglets installed per Marburger Enterprises STC SA00490LA. This includes all time spent with the winglets currently installed and any previous installations where the winglet was installed and later removed.

Example: A review of your airplane's logbook shows that you have accumulated 350 hours TIS since incorporating the Marburger STC. Further review of the airplane's logbook shows that a previous owner had installed the STC and later removed the winglets after accumulating 150 hours TIS. Therefore, your airplane's TIS with the winglets installed is 500 hours.

If you determine that the winglet STC has never been incorporated on your airplane, then your safe life is presented in paragraph (a)(1) of this AD. Any future winglet installation will be subject to a reduced safe life per these instructions.

2. Determine your airplane's unmodified safe life from paragraph (a)(1) of this AD.

Example: Your airplane is a Model AT-401B, serial number 1022. From paragraph (a)(1) of this AD, the safe life of your airplane is 7,777 hours TIS.

All examples from hereon will be based on the Model AT-401B, serial number 1022 airplane.

3. Determine the winglet usage factor from paragraph (a)(3) of this AD.

Example: Again, your airplane is a Model AT-401B, serial number 1022. From paragraph (a)(3) of this AD, your winglet usage factor is 1.1.

4. Adjust the winglet TIS to account for the winglet usage factor. Multiply the winglet TIS (result of Step 1 above) by the winglet usage factor (result of Step 3 above).

Example: Winglet TIS is 500 hours X a winglet usage factor of 1.1. The adjusted winglet TIS is 550 hours.

5. Calculate the winglet usage penalty. Subtract the winglet TIS (result of Step 1 above) from the adjusted winglet TIS (result of Step 4 above).

Example:

$$\begin{aligned} \text{Adjusted winglet TIS} &= \text{the winglet TIS} = \text{winglet usage penalty.} \\ (550 \text{ hours}) - (500 \text{ hours TIS}) &= (50 \text{ hours TIS}). \end{aligned}$$

6. Adjust the safe life of your airplane to account for winglet usage. Subtract the winglet usage penalty (result of Step 5 above) result from the unmodified safe life from paragraph (a)(1) of this AD (result of Step 2 above.).

Example:

$$\begin{aligned} \text{Unmodified safe life} - \text{winglet usage penalty} &= \text{adjusted safe life.} \\ (7,777 \text{ hours TIS}) - (50 \text{ hours TIS}) &= (7,727 \text{ hours TIS}). \end{aligned}$$

7. If you remove the winglets from your airplane prior to further flight or no longer have the winglets installed on your airplane, the safe life of your airplane is the adjusted safe life (result of Step 6 above). Enter this number in paragraph (d)(1)(ii) of this AD and the airplane logbook.

What if I have the Marburger winglet installed as of the effective date of this AD and plan to operate my airplane without removing the winglet?

1. Review your airplane's logbook to determine your airplane's TIS without the winglets installed.

Example: A review of your airplane's logbook shows that you have accumulated 1,500 hours TIS, including 500 hours with the Marburger winglets installed. Therefore, your airplane's TIS without the winglets installed is 1,000 hours.

2. Determine your airplane's unmodified safe life from paragraph (a)(1) of this AD.

Example: Your airplane is a Model AT-401B, serial number 1022. From paragraph (a)(1) of this AD, the safe life of your airplane is 7,777 hours TIS.

All examples from hereon will be based on the Model AT-401B, serial number 1022 airplane.

3. Determine the winglet usage factor from paragraph (a)(3) of this AD.

Example: Again, your airplane is a Model AT-401B, serial number 1022. From paragraph (a)(3) of this AD, your winglet usage factor is 1.1.

4. Determine the potential winglet TIS. Subtract the TIS without the winglets installed (result of Step 1 above) from the unmodified safe life (result of Step 2 above).

Example:

$$\begin{aligned} \text{Unmodified safe life} - \text{TIS without winglets} &= \text{Potential winglet TIS.} \\ (7,777 \text{ hours TIS}) - (1,000 \text{ hours TIS}) &= (6,777 \text{ hours TIS}). \end{aligned}$$

5. Adjust the potential winglet TIS to account for the winglet usage factor. Divide the potential winglet TIS (result of Step 4 above) by the winglet usage factor (result of Step 3 above).

Example:

$$\begin{aligned} \text{Potential winglet TIS} \div \text{Winglet usage factor} &= \text{Adjusted potential winglet TIS.} \\ (6,777 \text{ hours TIS}) \div (1.1) &= (6,155 \text{ hours TIS}). \end{aligned}$$

6. Calculate the winglet usage penalty. Subtract the adjusted potential winglet TIS (result of Step 5 above) from the potential winglet TIS (result of Step 4 above).

Example:

$$\text{Potential winglet TIS} - \text{Adjusted potential winglet TIS} = \text{Winglet usage penalty.} \\ (6,777 \text{ hours TIS}) - (6,155 \text{ hours TIS}) = (622 \text{ hours TIS}).$$

7. Adjust the safe life of your airplane to account for the winglet installation. Subtract the winglet usage penalty (result of Step 6 above) from the unmodified safe life from paragraph (a)(1) of this AD (the result of Step 2 above).

Example:

$$\text{Unmodified safe life} - \text{Winglet usage penalty} = \text{Adjusted safe life.} \\ (7,777 \text{ hours TIS}) - (622 \text{ hours TIS}) = (7,155 \text{ hours TIS}).$$

8. Enter the adjusted safe life (result of Step 7 above) in paragraph (d)(1)(ii) of this AD and the airplane logbook.

What if I install or remove the Marburger winglet from my airplane in the future?

If, at anytime in the future, you install or remove the Marburger winglet STC from your airplane, you must repeat the procedures in this Appendix to determine the airplane's safe life.

Issued in Kansas City, Missouri, on May 23, 2002.

James E. Jackson,

Acting Manager, Small Airplane Directorate, Aircraft Certification Service.

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