

AEROSTAR INTERNATIONAL, INC.

SERVICE LETTER 111

DATE OF ISSUE: May 15, 1999

SUBJECT: Airworthiness testing of Aerostar approved and non-Aerostar fabric used in Aerostar(Raven) hot air balloons

PROBLEM: In recent years, the FAA has approved several Supplemental Type Certificates (STCs) which allow the use of fabrics manufactured and supplied for repair or replacement of fabric in Aerostar (Raven) balloons. Some of these fabrics have been determined to be less strong than original Aerostar fabric and also do not use the same grade of nylon as is certified in Aerostar balloons. The coatings also possess significantly different characteristics.

Some of these fabrics have also been found to have much lower tear strengths at what should be normally acceptable levels of tensile strength.

DISCUSSION: There are numerous types of nylon manufactured in the yarn industry. Their performance varies greatly in strength degradation when exposed to the various damaging elements present in hot air balloons. Likewise, the coatings used on balloon fabrics can have a very great effect on the performance and aging characteristics. The outside effects that act to degrade balloon fabrics include heat, ultra violet(sun), humidity(or residual moisture), combustion by-products, chemicals...

Strength parameters established during certification take into account the proper safety factors for both when the balloon is new as well as when the fabric has aged due to use.

Annual inspection requirements are established based on the characteristics of the fabric. Aerostar has established strength test requirements based on years of experience in understanding the degradation characteristics of Aerostar fabrics. Minimum tensile strengths during annual inspections of Aerostar balloons (45 lbs/inch for 100 hours or 35 lbs/inch for a 50 hour re-test) correlate to tear strength values above the minimum tear strength for the appropriate standard.

Some STC'd fabrics which have been tested recently possess tear strengths which are significantly weaker in relation to the tensile strength. Testing tensile strength alone will not identify this condition.

CORRECTIVE ACTION: All fabric installed in Aerostar hot air balloons which is not Aerostar supplied fabric must be tested in accordance with the attached flow chart for fabric testing. This includes both tensile and tear testing on all annual and one hundred hour inspections.

The testing which is being required is standard testing as specified in the Aerostar Continued Airworthiness Instructions (ACAI). This change has been incorporated into the ACAI through Revision C, dated April 1, 1999. In addition to this change, tear testing methods have been changed to more closely emulate laboratory testing with a test designed in accordance with a Federal Test Method. For a copy of this tear test method, please contact Aerostar Customer Service.

APPLICABILITY: This requirement applies to all Aerostar and Raven balloons where the original certification basis of the balloon is under Type Certificate A15CE that have any quantity of repair or replacement fabric in the balloon which was not approved Aerostar fabric.

If you have any questions, please contact:

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NOTE: NON-AEROSTAR FABRIC IS CONSIDERED TO BE FABRICS SUPPLIED UNDER THE APPROVAL OF AN STC WHERE THE STC ALLOWS THE USE OF FABRIC OTHER THAN AEROSTAR SUPPLIED MATERIAL FOR REPAIR OR REPLACEMENT. FABRIC WHICH WAS NOT APPROVED BY AEROSTAR OR THROUGH AN STC IS UNAUTHORIZED AND CONSIDERED UNAIRWORTHY AND MUST BE REMOVED FROM THE AIRCRAFT.

FIGURE 5.1.C REQUIRED FABRIC TEST FLOW CHART, CALENDARED FABRIC AND NON-AEROSTAR FABRIC **

