Luscombe Silvaire Model 8 Aircraft Type Certificate Holder

SERVICE RECOMMENDATION #2
December 15th, 1993, REVISED September 9, 1997

Applicability: All Luscombe model 8 series aircraft. (models 8, 8A, 8B, 8C, 8D, 8E, 8F, and T-8F)

Purpose: To facilitate the visual inspection of the internal wing front and rear spars for corrosion. This area is not readily visible in metal wings during routine maintenance due to a wing design defect; and the original manufacturer's failure to install routine inspection access to the internal wing areas. Service history of some of the Luscombe Model 8 series wings have shown intergranular corrosion in the spar extrusions. Other contamination and corrosion have also been discovered in many instances.

Time of Compliance: The next annual inspection, or by January 26, 1998 (per AD 96-24-17), whichever comes first, and at intervals not to exceed 12 months thereafter.

Compliance procedure:
1A. Fabric covered wings. These wings may be inspected through the 18 existing wing inspection holes called out in drawing 08200 and depicted in sketch SK0821 38, available from DLAHF. No further inspection nor additional holes beyond those specified in this paragraph are required for fabric covered wings, as intergranular corrosion will likely have been found, during the more thorough regular inspections that coincide with recovering of the wing structure.
1B. Metal covered wings. Order and install DLAHF Kit # 8007, Wing Access and Inspection Kit.
Install two (2) additional wing inspection holes on each lower wing surface per DLAHF drawing SK 18, pp & pp2, (attached).

a. Measure and mark the location center for one additional inspection hole midway between the spars on the lower surface of the wing, 44 inches outboard of the wing butt rib.
   a1. Using the doubler included in the DLAHF kit #8007 as a template, mark the location for the inspection hole diameter, as well as the rivnut locations, on the wing skin.
   a2. Cut out the inner diameter of the inspection hole from the wing skin.
   a3. Drill the rivnut locator holes as marked using a #30 drill bit.
   a4. Insert the doubler through the cut out by gently bending the doubler between thumb and forefinger.
   a5. Relocate the doubler inside the skin and align the cutout and locator holes. Hold it in place temporarily with clecos or PK screws.
   a6. Drill through both the skin and doubler using a #2 drill bit.
   a7. Insert rivnuts in the #2 holes using the appropriate tooling.
   a8. Enlarge the coverplate holes to align with the rivnut location and screw size using a #16 drill bit.
   a9. Attach the coverplate with the screws provided, in accordance with drawing SK 1 8pp2.
b. Measure and mark the location for one additional inspection hole forward of the leading edge spar on the lower surface of the wing, 64 inches outboard from the butt rib and centered at least 4 inches forward of the spar rivet line. To install the second inspection hole, (steps bi through b9), repeat steps al-ag at the second location.
c. Modify the wing tip to be removable.
   c1. Drill out all of the tip fairing rivets using a #27 drill.
   c2. Remove the tip fairing.
   c3. Replace the rivets through the skin and the front or rear spars with AN426 flush rivets to secure the former, spar and skin into place.
   c4. Install at least six rivnuts, (3 top, 3 bottom) through each tip skin and former using the proper tooling. The remaining skin to former attachments may be made using flush structural rivets, or rivnuts and machine screws through the fairing. Either option is acceptable.
   c5. Re-install the wing tip fairing using the screws and rivnuts.
d. These three modifications, (a through c) allow for visual inspection of the wing spars without disturbing any of the wing structural attachments while providing easy inspection access to the wing structure for regular inspections required under FAR 43, appendix D, (a) & (f).

continued on page 2

2. Inspect the wings thoroughly for corrosion, deformity, or contamination.

a, Inspect the front of the rear spars, and the rear of the front spars through the removable wingtip, and the inspection hole 44" outboard of the wing butt rib between the spars. Pay particular attention to straw or cotton nests in the internal wing area. These are evidence of birds or mice, whose fecal residue is corrosive to aluminum. Rivets with "popped" or missing heads are indicative of underlying spar damage requiring further examination. CAUTION: If using an electrical lamp to light the internal wing areas, be extremely careful to protect the power cord which can be easily cut by sharp aluminum edges on ribs, formers, and inspection cutouts, leading to electrical shock.

b. Inspect the rear of the rear spars by removing the inboard wing root failing at the wing "notch" just aft of the cockpit doors, and at the front of the aileron attachment area.

c. Inspect the front of the front spars by rigging a "light trolley" shown in the instructions with DLAHF kit #8007, and pulling it along the aileron cables while viewing the spar from the previously existing holes at either end of the wing leading edge, and from the new access hole at the leading edge mid-point. Assemble the trolley light, wrapping a tie wrap loosely over the aileron cable. Using picture wire, .051 safety wire or other stiff wire, put a small loop around the tie wrap that is used around the aileron cable. The light may now be moved along the spar with ease by feeding the wire through the aileron cable inspection hole installed in accordance with paragraph 1B, b above. CAUTION: Be certain to remove the light trolley after use because it might jam the flight controls if it is left on the aileron cables. (a small figure of this trolley installation is included with your inspection kit)

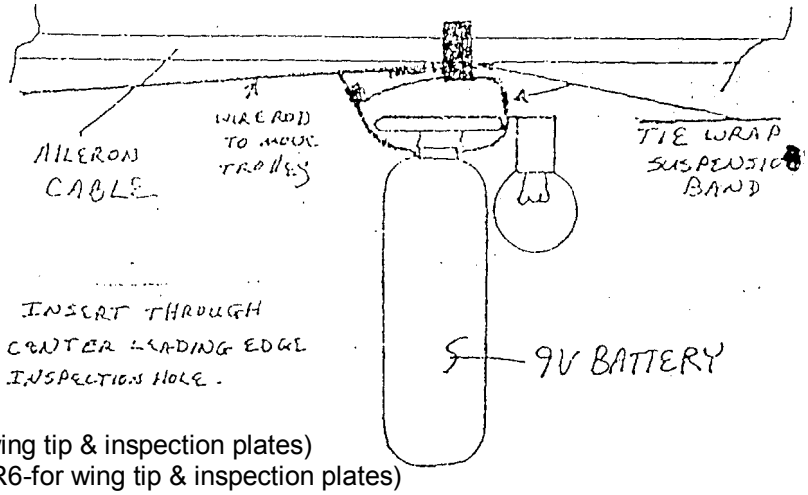
Action & Standards. Spars showing signs of corrosion exceeding 10% of the spar thickness should be replaced with an airworthy part prior to further flight. Swelling or splintering of the spar capstrip or web is not acceptable. Splicing of the extruded spar is not satisfactory. Corrosion on wing skins and structure should be removed and the cleaned skin sealed with corrosion inhibitor, corrosion block or similar preparations such as an epoxy chromate primer. Wing components exhibiting pitting or degradation should be removed and replaced with new or serviceable units. Refer also to AC43.13-1A, CHAP 6, para 248 & 250.

Special tools and materials. The Luscombe service kit required for compliance with this modification and inspection contains screws, rivnuts, coverplates, reinforcement templates, drawings, instructions, FAA M&D report (form 8010-4), annual inspection checklist and a trolley light for inspection purposes. This kit is available from the Luscombe Foundation at 480-917-0969 or at the address above. An inexpensive rivnut installation tool is also available from the Foundation. This modification requires a rivnut squeezer with a #8 machine screw tip, inspection lights, inspection mirrors, a 4" hole saw or Malco hole cutter, or flycutter, a half round file, and standard mechanic's hand tools.

Alternative inspection Procedures. Holes in the Luscombe metal wing such as those provided by the factory to install prefabricated tip assemblies, or those installed under STC, or FAA field approvals prior to the original FAA AD 96-24-17 issue date, and which afford convenient routine inspection access to 95% of the spar and internal wing area may be found adequate to accomplish the goals of this Service Recommendation, or may be used in conjunction with the access provided by this Service Recommendation to effect proper routine maintenance inspections of the Luscombe wings. Such alternative inspection access holes should be referred to your FAA principal maintenance inspector (PMI) for concurrence as meeting the inspection objectives of AD 96-24-17.

FAA REVIEW The design engineering aspects of this bulletin have been shown to comply with the applicable Federal Aviation Regulations, and are FM Approved. Revision dated September 9, 1997 of this Service Recommendation #2 is approved by the Manager, Los Angeles Aircraft Certification Office (LAACO) by letter dated September 26, 1997, as an alternative method of compliance (AMOC) for the revision November 21, 1995 referenced in AD 96-24-17, Sections (a), (b), and (f).

Approximate cost:
Labor: 7 man hours
Parts: $136 for the kit



Service Recommendation #2 Parts List

1 set of instructions (service letter)
1 feedback form on inspection results (DLAHF form)
1 Malfunction & defect report (FAA Form)
1 Sample page 18 & 19 from manual -
1 Sample log book entry/parts list (this sheet)
1 battery
1 light assembly
4 support wraps
At least 80 #8/32 machine rivnuts (NAS1 329-A for wing tip & inspection plates)
At least 80 #8/32X 1/2 machine screws (AN526-832R6-for wing tip & inspection plates)
At least 70 countersunk rivets (MS20426AD4-4 - for wingtip former)
4 reinforcement rings
4 cover plates

(additional plates and rings available at $8.00 each)

NOTES

(additional plates and rings available at $8.00 each)
Corrosion X or ACF 50 corrosion inhibitor kits available for $50. Includes enough to do both wings & fuselage.

USE OF THIS KIT

Locate and mark the position of new inspection holes and access as noted in the Service Recommendation #2.

Maintenance Records

After completion of the inspection and or modifications to the aircraft in accordance with this service recommendation, so note details in the aircraft maintenance records for future reference. If any defects are noted, please complete a malfunction and defect report for filing with the FAA, a copy of this, or description of defects and location including aircraft serial and/or wing serial number, aircraft registration number and owner name should be forwarded to the Luscombe Foundation at 1890 E Queen Creek Rd, Chandler AZ 85249.

Sample Maintenance Record Entry

"Installed inspection holes in metal wings in accordance with AC43.13-1A, paragraph 100D & fig 2.24, AC43.13-2A Chapter 1, Luscombe operator's handbook/service manual Section IV, paragraphs #C & #D, and Luscombe Foundation service recommendation #2. Completed a detailed inspection of the wing interior for intergranular & surface corrosion in the wing spars and skin surfaces. (note findings) Notified ATC holder and FAA of any structural defects. Treated wings with corrosion inhibitor. Mechanic # date."

Alternative compliance.

Other inspection openings may be determined acceptable. Contact FAA representatives of the Los Angeles Aircraft Certification Office for details and alternate compliance review of STC's or data acceptable to the administrator.

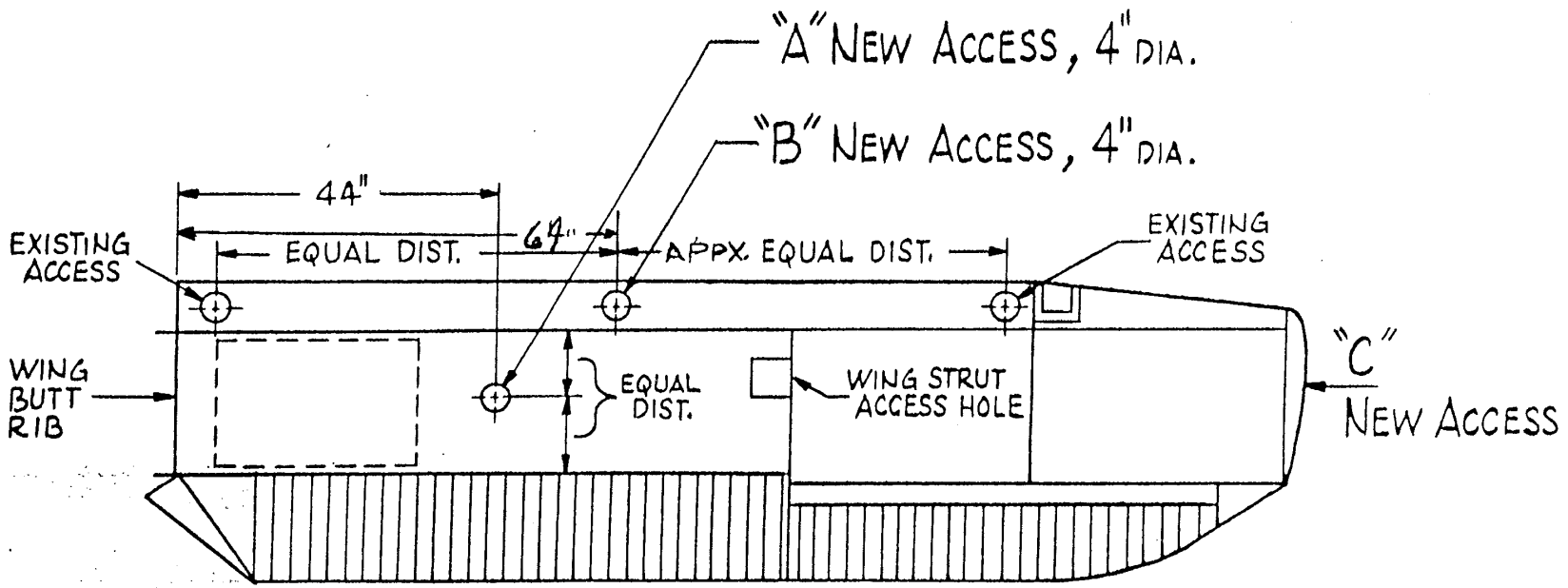
Supplemental data

Intergrannular corrosion is caused by a flaw in the heat treat process at the production stages of the spar. Generally, the metal is removed from the furnace heat source, then quenched to stabilize the alloy condition for strength or toughness. Prompt timing of this process, and thorough quenching is essential to the successful heat treatment. A boiling quench bath, or parts allowed to air cool, or that come into contact with forced air may develop stratification of the alloy materials, which in turn over time, creates intergrannular corrosion. Some moist environments may exacerbate the evidence of the condition, but generally this corrosion is not a result of post manufacturing environments. Engineering report #1105, and the AC 65 airframe mechanic's handbook, discusses this corrosion issue further.

Intergrannular corrosion usually looks like a rise, wave, bubble or rough area on the spar. In later stages, as the metal separates, it looks much like a bubble, under which there is coarse "hair" or Christmas tinsel as it comes in the box. "Picking" at the bubble or rough area will usually cause the "hair" to fall free from the base metal of the spar.

Intergrannular corrosion should not be confused with surface corrosion caused by animal urine and other contaminants left on the spars while in storage, though such contaminants can similarly reduce structural integrity. Wings should be stored tip up, with the spar butt resting on the floor when stored for periods exceeding 3 or 4 days, to preclude such types of contamination. Repair of spar corrosion, whatever the cause, is generally accomplished through replacement of the spar.

Discussions of the wing structure, stress, and analysis is contained in report #907 & 909. See also AC43.13-1A & AC43.13-2A as noted above.



BOTTOM VIEW

THE DON Luscombe AVIATION HISTORY FOUNDATION

A Non-profit group dedicated to preserving the Luscombe Aviation Heritage

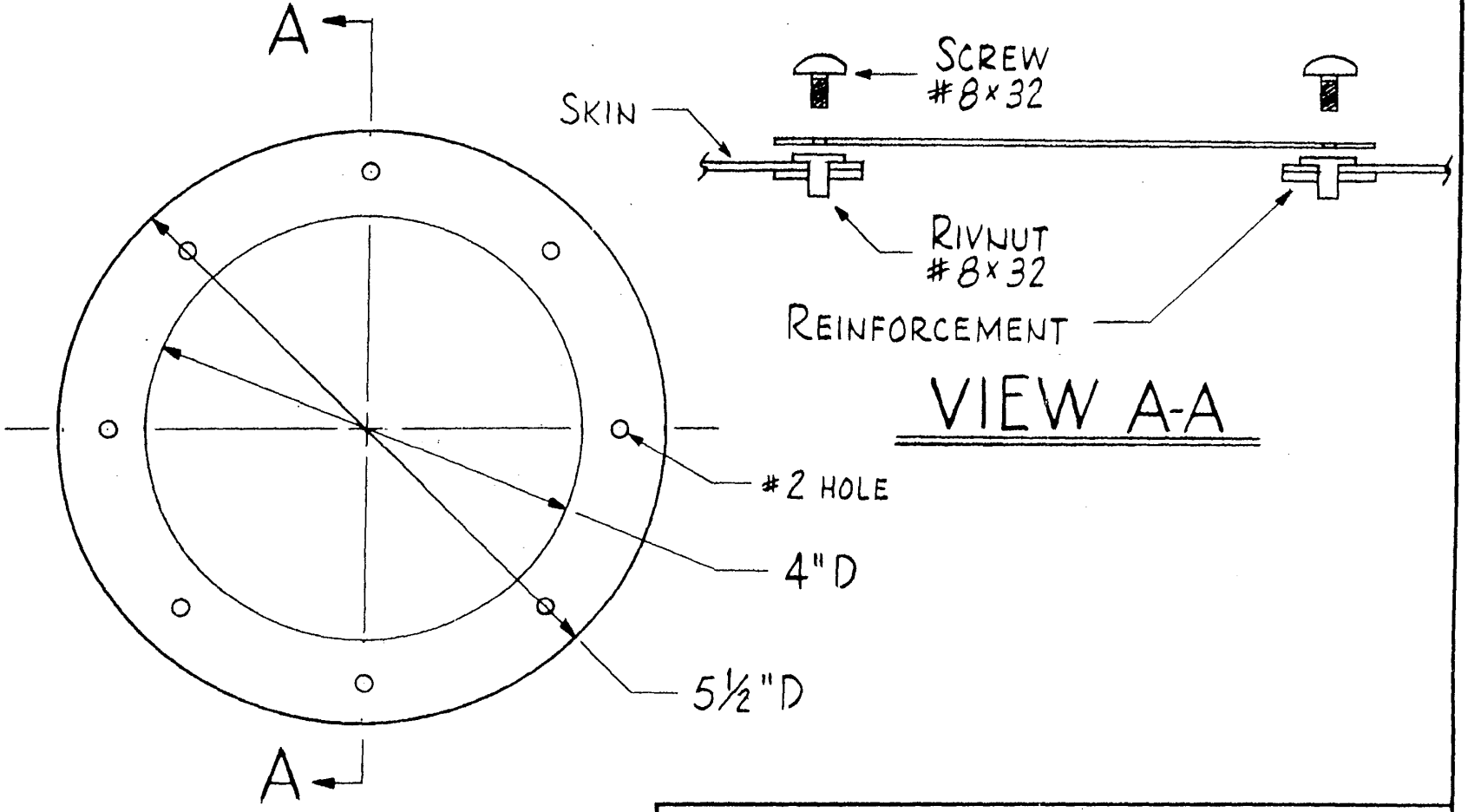
SERVICE RECOMMENDATION # 2

SCALE: N.T.S.	APPROVED BY:	DRAWN BY D.J.W.
DATE: 11-16-93		REVISED

ADDITIONAL WING INSPECTION ACCESS HOLES

DRAWING NUMBER SK 18 PP1

8½ X 11 PRINTED ON NO. 1000H CLEARPRINT ♦



SERVICE RECOMMENDATION # 2		
SCALE: N. T. S.	APPROVED BY:	DRAWN BY D. J. W.
DATE: 11-16-'93		REVISED
ADDITIONAL WING INSPECTION ACCESS HOLES		
ACCESS HOLE REINFORCEMENT		DRAWING NUMBER SK 18 PP2