

DATE: MAY 26, 1960
SUBJECT: PREVENTIVE MAINTENANCE OF WING AND EMPENNAGE
MODELS AFFECTED: M-20 AND M-20A AIRCRAFT, ALL SERIAL NUMBERS
TIME OF COMPLIANCE: NOTED BELOW

INTRODUCTION:

Experience has indicated that there is a need for the issuance of detailed instructions regarding proper preventive maintenance of wing and empennage on the M-20 and M-20A aircraft. Compliance with the following instructions will yield dividends in terms of long service life.

The wood structure is protected from moisture on the outside by a waterproof fabric and dope covering and on the inside by a varnish type sealer. This inside sealer prevents a rapid change in moisture content of the wood. Drain holes are drilled at the low spots and vent holes are drilled at the high spots in all areas. These holes, when kept open, allow for drainage and air circulation. They should be inspected at least every ninety days. Wood will not stain or decay if the moisture content is less than 20 percent. Proper maintenance of the sealing agents and drain and vent holes will in normal conditions keep the moisture content below a dangerous level.

Wood which has had considerable contact with water will be stained. Water stains are usually dark and well defined. The stained wood may appear rough and may feel soft when compared with unstained wood. Check any stained area by making indent with fingernail or pointer (similar to lead pencil) and comparing hardness with nearby unstained wood of the same material and thickness.

Glue joints should be carefully inspected for glue deterioration in areas of stained wood. An unsound joint can sometimes be detected by gently flexing adjacent parts. A loose section of a glue joint can sometimes be detected by tapping the joint with a small mallet or hammer since the sound emitted is different from that obtained in tapping on the sound portion of the joint. If a crack is apparent in a glue line check its extent with a .003 to .005 feeler gauge. Ribs and spars are made with a spruce core and plywood webs. The glue joints between external wing skin and vertical plywood webs on ribs and spars are not structural, and separation to this depth is allowable. The thickness of webs may be measured at drain and vent holes. Webs are 1/16 to 1/8 on ribs and up to 1/4 inch thick on spars.

Accomplish the following at 12 month intervals. If these items have not been accomplished within the past 12 months, they should be complied with as soon as possible. If any repairs are necessary they should be made in accordance with CAM-18 or the manufacturer's instructions.

1. Wing Inspection and Maintenance

- a. Remove rear seat, auxiliary fuel tank and wing-to-fuselage fairings. Visually inspect all exposed areas for wood or glue joint deterioration. Apply one coat of aluminized sealer or spar varnish to the interior center section after inspection or repair.
- b. Visually inspect in main gear wheel well areas for wood or glue joint deterioration. Apply one coat of aluminized sealer or spar varnish to the wing wheel well compartment after inspection or repair.
- c. Remove all wing access panels. Visually inspect all areas that can be viewed through these openings for wood or glue deterioration.

- d. ~~Visually inspect the wing trailing edge for wood or glue joint deterioration.~~ Visually inspect the fabric for cracks or breaks. In areas where fabric shows a crack or break, open the fabric and inspect the adjacent wood and glue joints.
- e. Clear all wing drain holes.
- f. Scupper Boxes: Fill any space between the sides of the fuel tank scupper boxes and wing with Scotch calking compound or equivalent.
- g. Wing-Fuselage Joint: Check the condition of the tape that seals the joint between the wing and fuselage. See that tape is applied tightly against wing and fuselage from the leading edge to the trailing edge of the wing. Replace this seal as necessary using a water resistant tape. Minnesota Mining & Manufacturing Company Pressure Sensitive Tape No. 380 is suitable. Add this tape on airplanes prior to Serial No. 1196.

2. Fin and Stabilizer Inspection and Maintenance

- a. Remove fairings between fuselage and empennage and visually inspect the empennage areas which are not covered with fabric for wood or glue joint deterioration. Also, in covered areas where the fabric shows a crack or break, open the fabric and inspect the adjacent wood and glue joints for deterioration.
- b. Clear empennage drain holes.
- c. Add a piece of water resistant tape on right and left side of horizontal stabilizer as shown in sketch below.

