



Winter 2024

AT-10 WICHITA



AIRCORPS AVIATION

Cadet Air Corps Museum AT-10 Wichita Restoration

by Chuck Cravens



A rare color photo of an AT-10 being refueled. USAAF photo via National Archives

Most of the work on the AT-10 recently has centered on the empennage. Each component has been removed, one at a time so that the vertical stabilizer stays in alignment without requiring a fixture to be made. As each part is reinstalled, the alignment remains as the next part is removed for restoration.

Some fuselage work also took place as test fitting of the tail wheel, tailcone, and the skin under the horizontal stabilizer were completed.

A second coat of varnish was applied to various wood parts, the fuselage assembly, and the cockpit floor.



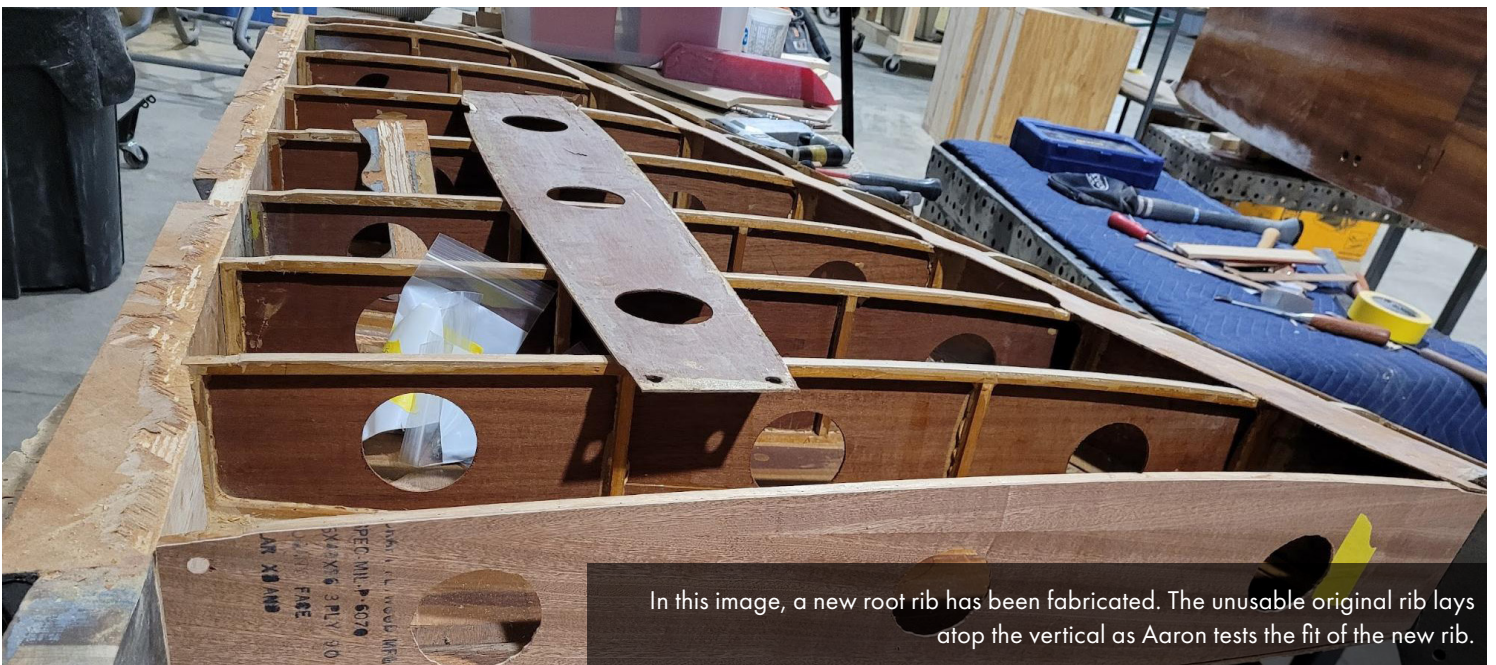
Empennage

As Aaron inspected the empennage, it became clear that the vast majority of the glue joints would have to be separated and reglued. But much of the wood of the inner structure is in good shape. So Aaron is using a procedure to restore the vertical stabilizer without the need for a fixture. He removes one rib and makes that rib airworthy by separating then regluing the joints, or in 2 cases on the vertical, making a new rib.

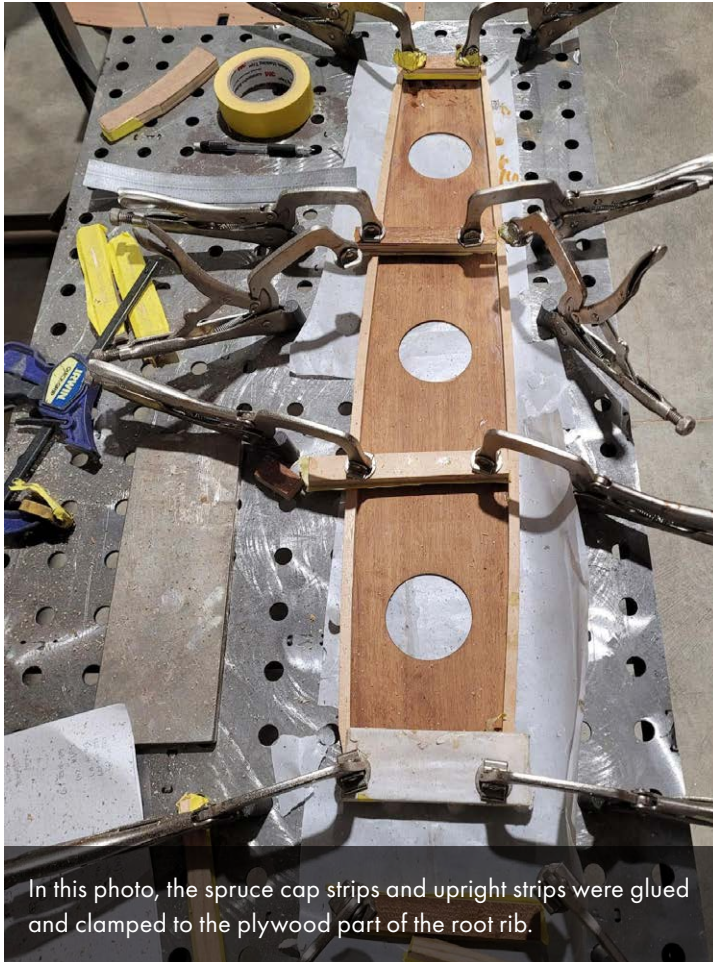
The now airworthy rib is reinstalled before the next rib is removed. Because only one component is removed at a time, the structure maintains alignment.



The CAD department has produced a rendering of the AT-10 horizontal stabilizer.



In this image, a new root rib has been fabricated. The unusable original rib lays atop the vertical as Aaron tests the fit of the new rib.



In this photo, the spruce cap strips and upright strips were glued and clamped to the plywood part of the root rib.



This part is the other new rib that had to be fabricated because of damage. It is the third rib upward from the base of the vertical.



The root rib of the vertical stabilizer is in place.

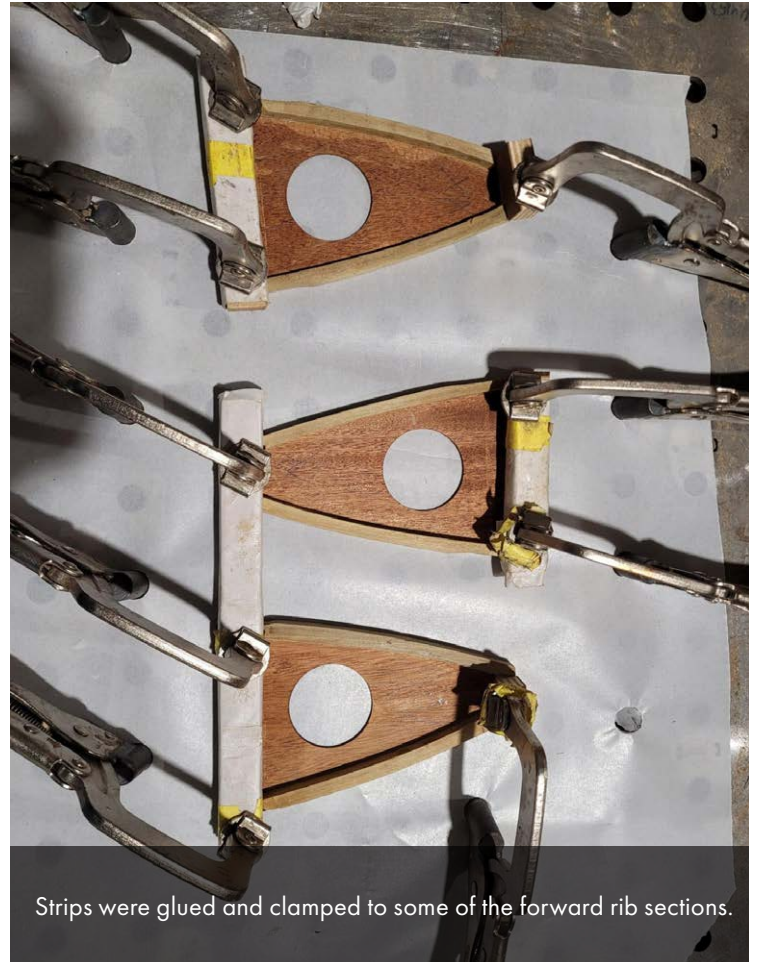


Here the new third rib and a 1/16" plywood reinforcement for the rudder hinge installation are glued and clamped in place.

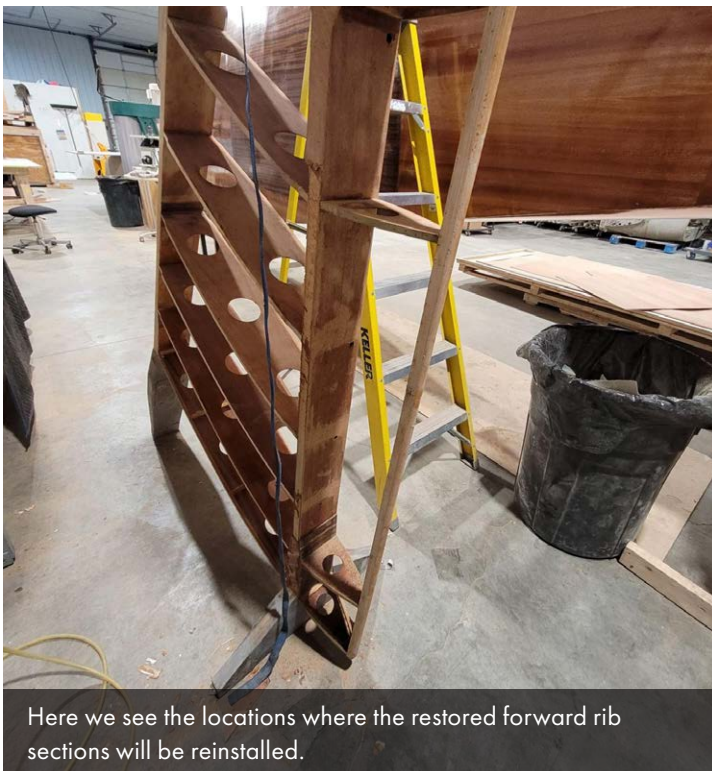




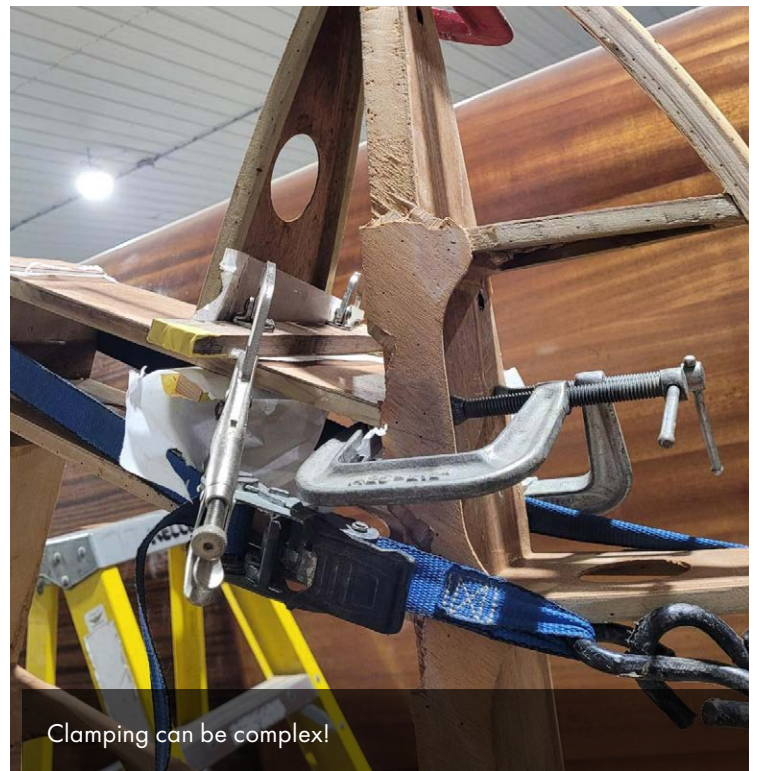
Aaron painstakingly sands the vertical stabilizer trailing edge spar cap to create a perfect fit.



Strips were glued and clamped to some of the forward rib sections.

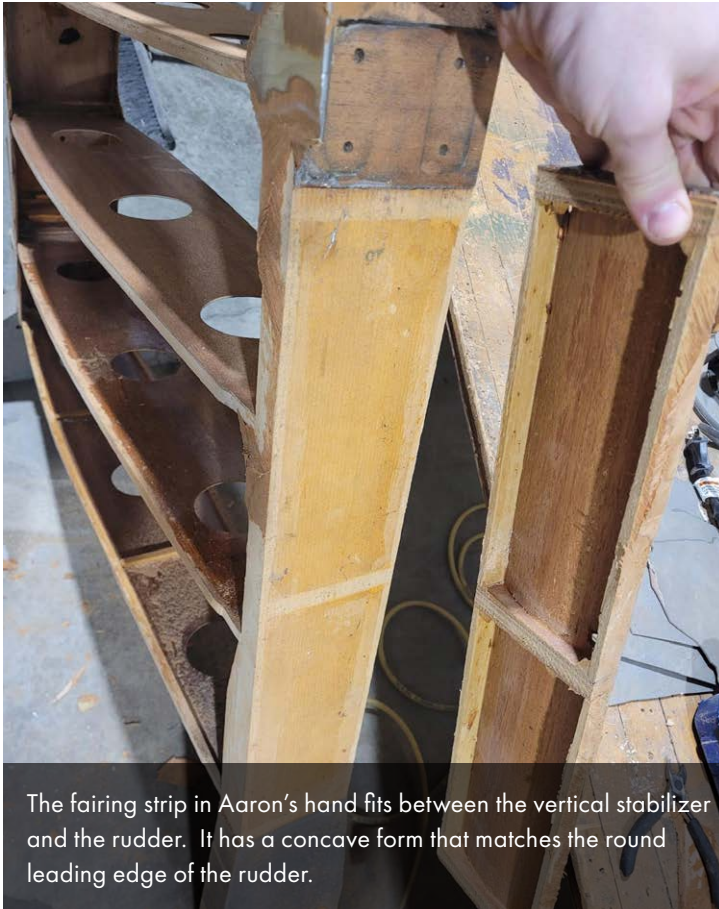


Here we see the locations where the restored forward rib sections will be reinstalled.

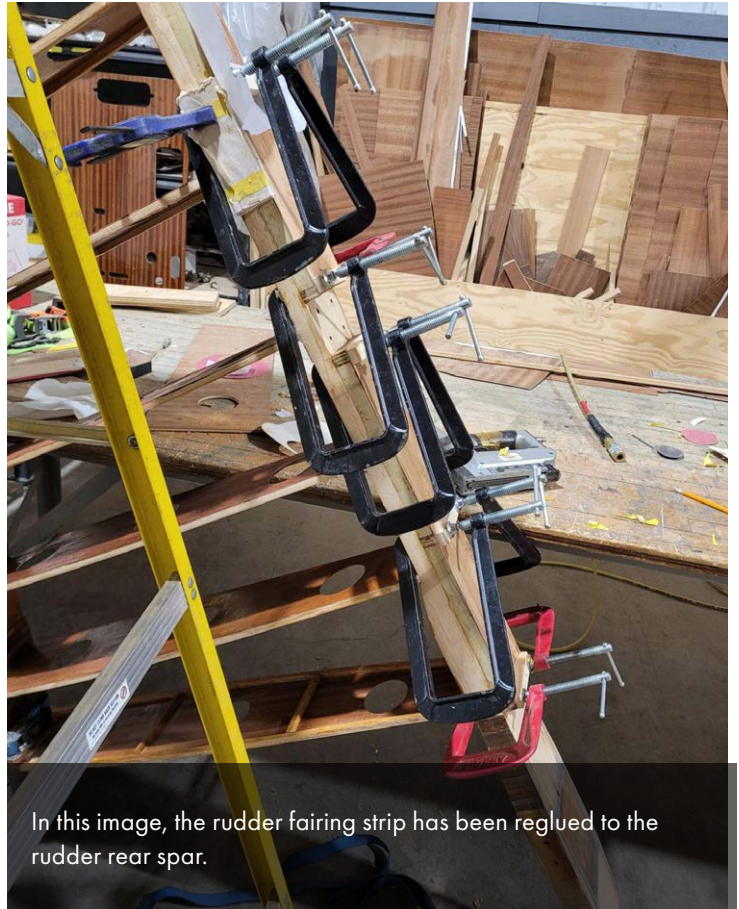


Clamping can be complex!

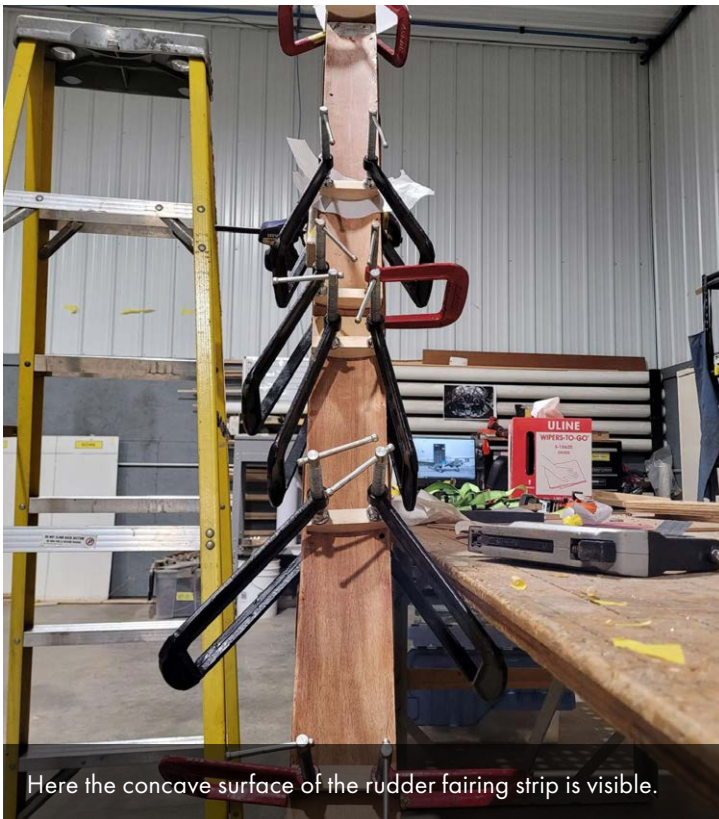




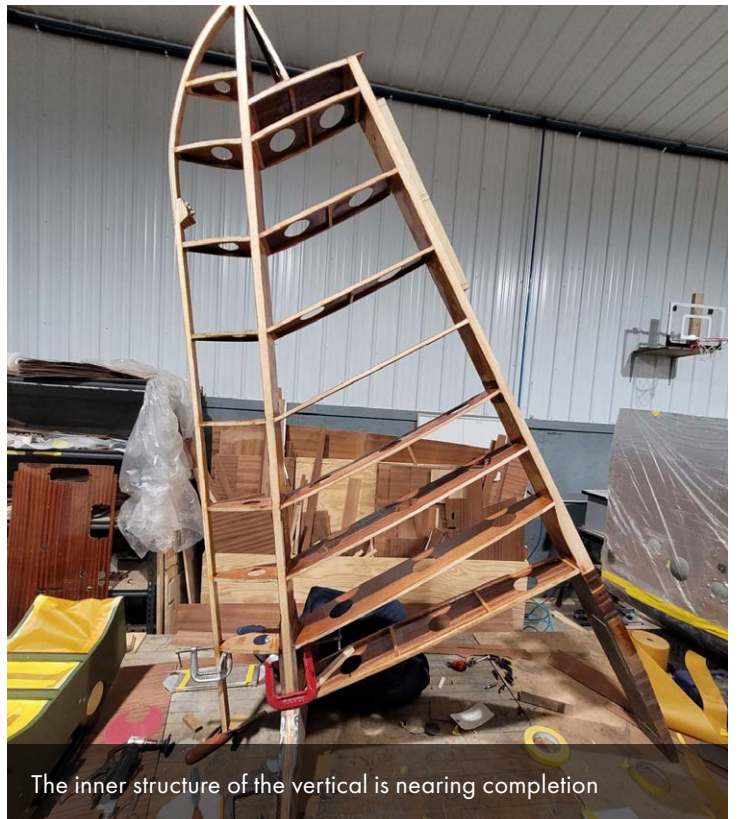
The fairing strip in Aaron's hand fits between the vertical stabilizer and the rudder. It has a concave form that matches the round leading edge of the rudder.



In this image, the rudder fairing strip has been reglued to the rudder rear spar.



Here the concave surface of the rudder fairing strip is visible.



The inner structure of the vertical is nearing completion



Fuselage

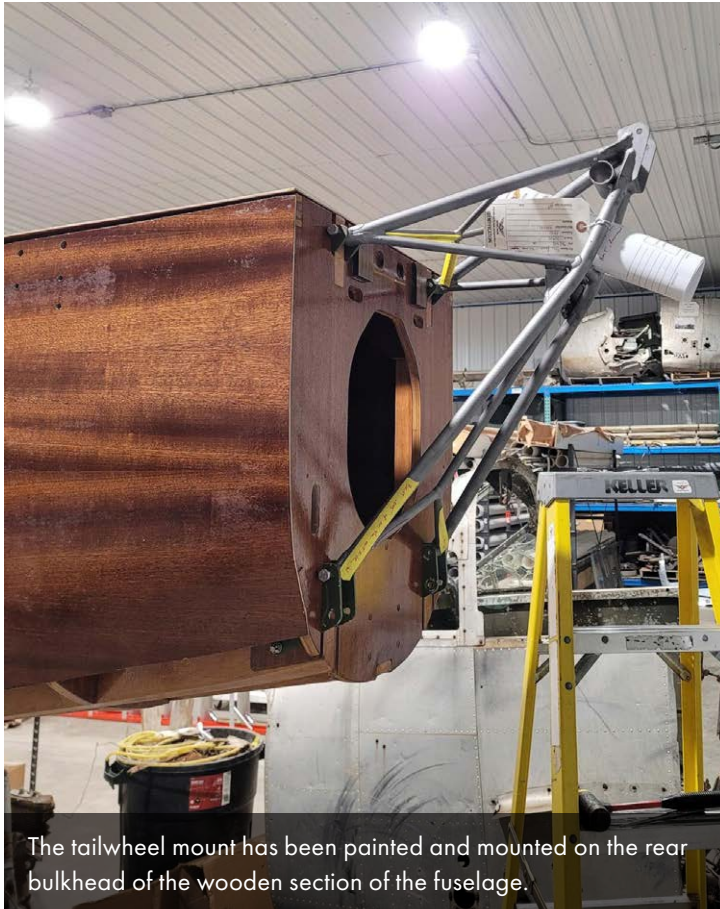
This cockpit section is currently at the paint shop where the black areas of the dash and the instrument and auxiliary panels will be painted.



The cockpit floor is finished and has received its two coats of varnish.



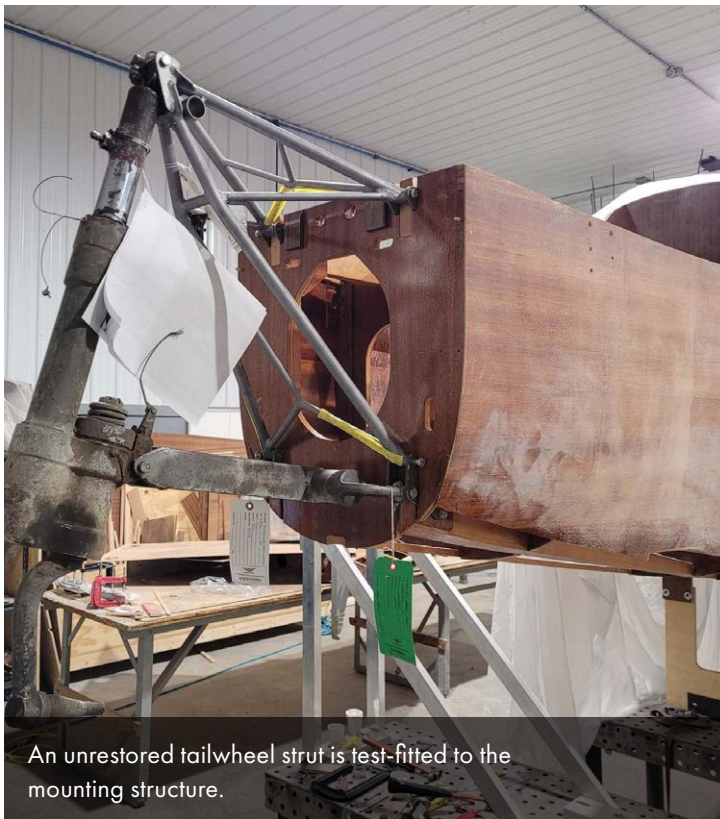
The aluminum tail cone is in place for testing the fit.



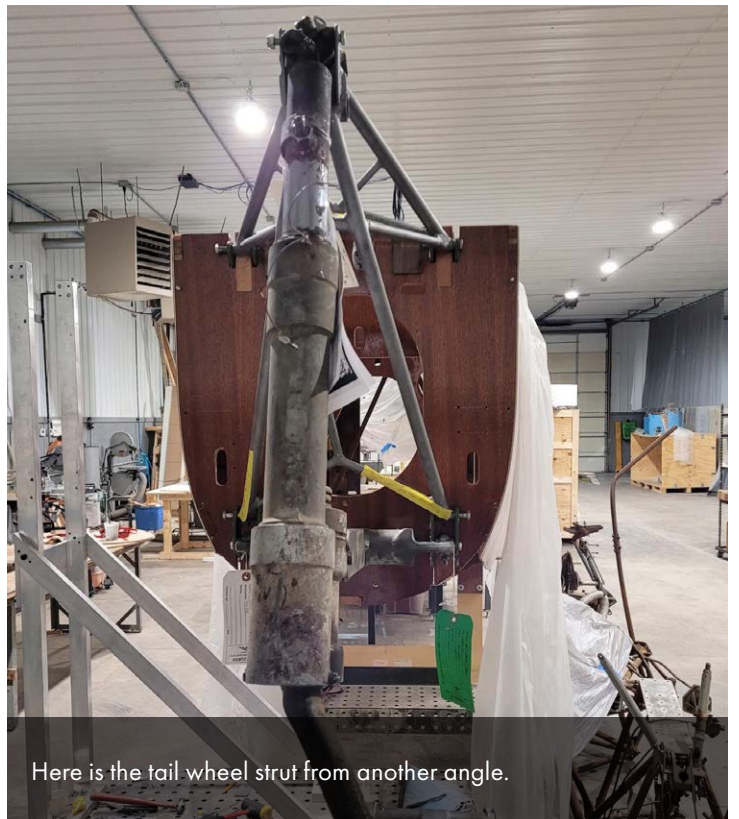
The tailwheel mount has been painted and mounted on the rear bulkhead of the wooden section of the fuselage.



Here is a view of the tailwheel mounting structure from the rear.



An unrestored tailwheel strut is test-fitted to the mounting structure.



Here is the tail wheel strut from another angle.



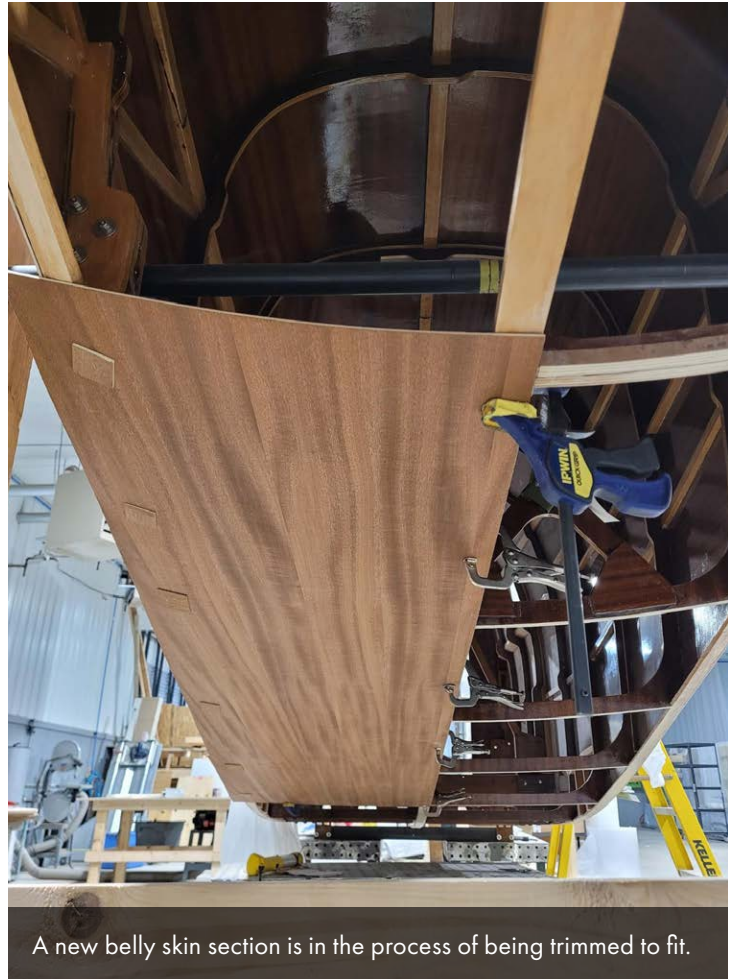
The tailwheel protrudes from the tailcone.



The horizontal stabilizer mounts atop this fuselage skin section.



Attach fittings for the horizontal stabilizer have been installed.

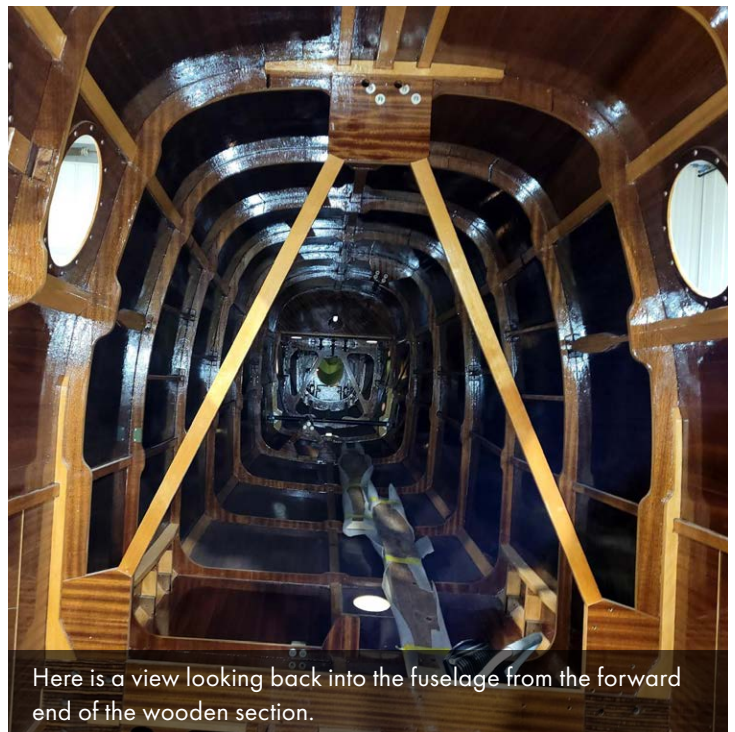


A new belly skin section is in the process of being trimmed to fit.

These brackets will hold pulleys for the control system. The brackets on the left and right are for rudder control cable pulleys. The center bracket holds the elevator control cable pulley.



This bracket is for a trim cable pulley.



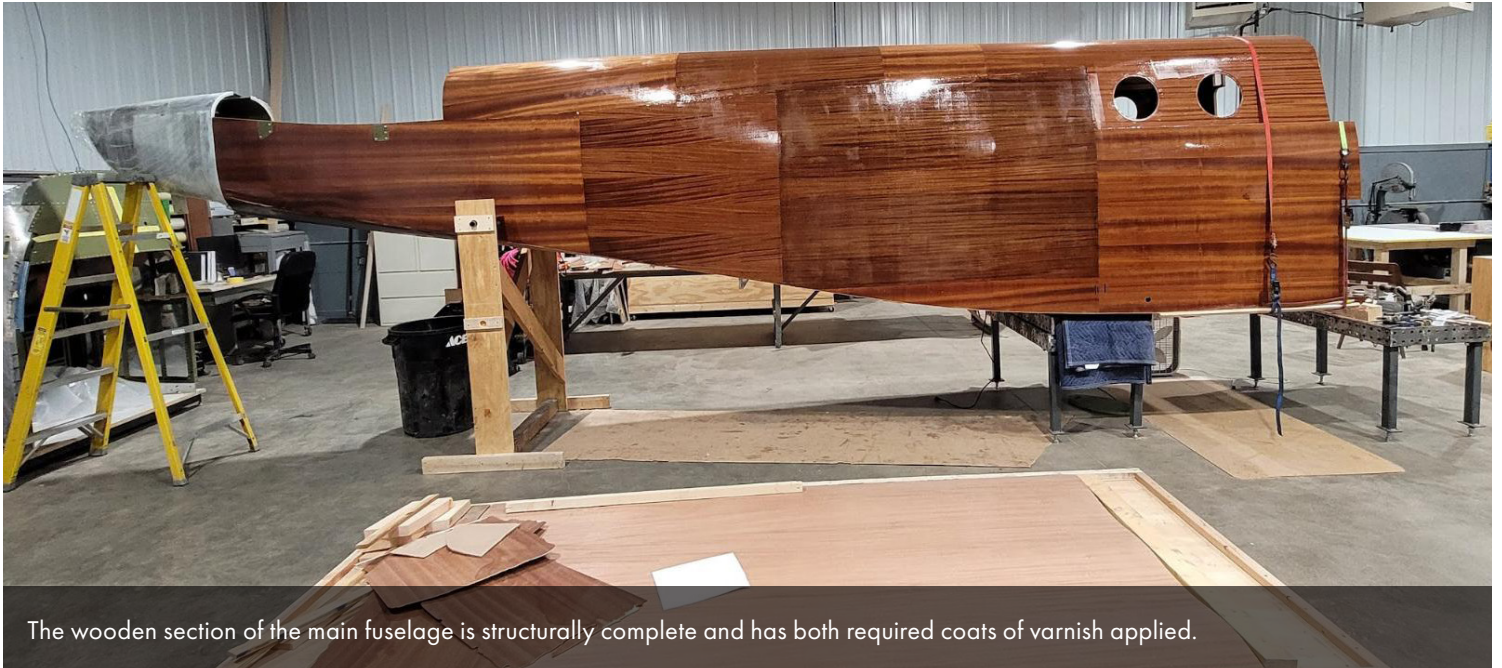
Here is a view looking back into the fuselage from the forward end of the wooden section.



Aaron restores longerons that will run beneath the floor aft of the cockpit.



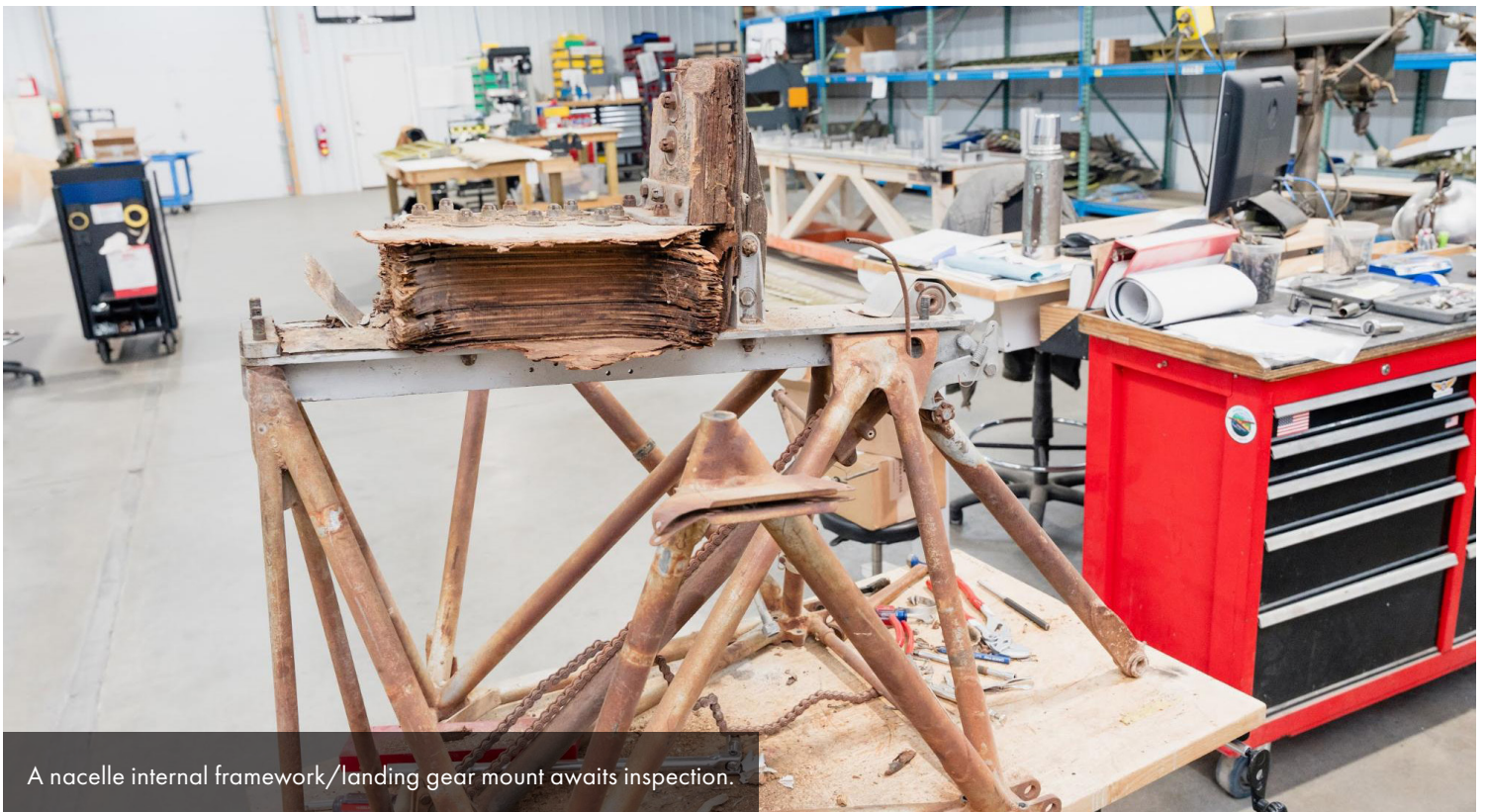
The floor aft of the cockpit has a removable panel that is held in place by Dzus fittings.



The wooden section of the main fuselage is structurally complete and has both required coats of varnish applied.

Nacelle Components

There are several landing gear mounts available to choose from, so after each is inspected, the best two will become part of the restored AT-10.



A nacelle internal framework/landing gear mount awaits inspection.



Here's another landing gear mount/ internal nacelle structure. The tubular component with a chain running above it is the retract slide tube.

Want to get involved?

We are constantly looking for new technical material related to the AT-10. Due to the rarity of this aircraft, and the relatively low number that were produced, acquiring engineering drawings, parts catalogs, maintenance manuals, and other documentation has been much more difficult than with our past restorations. If you have any AT-10 material, or know someone who does, we'd like to hear from you!

Be a part of helping the AT-10 return to the skies!

Contact Ester Aube, email or phone
estera@aircorpsaviation.com or 218-444-4478



Should anyone wish to contribute to the Cadet Air Corps Museum's efforts, please contact board members Brooks Hurst at 816 244 6927, email at wingnutsflyingcircus@yahoo.com or Todd Graves, todd.graves@pobox.com. Contributions are tax deductible.