BY ANDY ANDERSON ■ PHOTOS BY ANDY ANDERSON

C-131 SAMARITAN

A military transport based on the classic civilian twin-engine Convair CV-240

DESIGNED AS A REPLACEMENT for the Douglas DC-3, the CV-240 went into service in 1948. It was powered by twin Pratt & Whitney R2800 radial engines and could carry 40 passengers. Known as the Samaritan, the C-131A military version was delivered to the U.S. Air Force in 1954 to be used for casualty evacuation. It had large doors for stretchers and cargo, and could accommodate 27 stretchers. Several versions were developed including the T-29A "Flying Classroom," which was a navigation/bomber trainer used to replace the aging B-25 Mitchell. The C-131 was the first pressurized twin-engine transport adopted by the Military, and several Samaritans were later converted to VIP staff transports.

THE MODEL

The C-131 has great proportions for an RC model. I developed my working drawings with great 3-views from the book "Convair Twins Vol. 12," part of the "Airliner Tech Series" by Veronico and Larkins. My 82-inch-span model is built roughly to 1/14-scale because I wanted it to fit my building board and my wife's minivan. The model is sport scale and has an enlarged wing chord for a more comfortable wing loading. For simplicity, I didn't include the wing fillets and I made the nose gear retract aft instead of forward. The engine nacelles are also slightly longer than scale because of the enlarged wing chord.

THE WING

The wing panels are built upside-down on a 12x48-inch building board. Frame up the panel then cut away the leading edge between ribs W-4a and W-4b. Install the two-ply nacelle side doublers by gluing them to ribs W-4a and W-4b, but don't install the firewall yet.

Install the main landing gear mounting plates; they should be tied into ply nacelle doublers. Use shims to align the landing gear vertically after the wing has been installed in the dihedral fixture. The lower spars interfere with the struts when the mains are retracted. This is addressed by cutting away a small portion of the lower spar and adding a maple block splint to keep it strong. Note the locations of the aileron and flap servos; their mounts can be installed from the top before the top sheeting goes on. The retracts are Robart mechanical units installed with the throw rod reveresed to place the servo behind the units.

ENGINE NACELLES

Cut out the firewall and the cowl frames and use dowel pins to keep them in alignment. With the wing on the dihedral fixture, glue the firewall and the nacelle formers in place so they are perpendicular to the building board. The firewall has no side or downthrust. The tank floor goes from the spar to the firewall, but cut the throttle servo opening in its aft end before gluing it into place. There needs to be room for the retracted main gear under the tank. The tank floor location is shown on the plans, and the engine is rotated 30 degrees from the center to align the carb. with the tank centerline. Install the engine and fuel tank, drill the fuel line holes in the firewall, and then install the throttle servo and linkage.

THE C-131 WAS THE FIRST PRESSURIZED TWIN-ENGINE TRANSPORT ADOPTED BY THE MILITARY

All dressed up and ready to go. Major Decals and Evolution 3-blade props add to the model's scale appearance.

Frame up the nacelle blending in the tank and landing gear hatches.

Make a strong mount for the retract servo and check the linkage alignment. Make the lite-ply aileron and flap servo mounts, attach them to the bottom wing sheeting, and then cut away the servo openings. Prepare the main and aft dihedral braces and add the sheer webbing to the main spars. Finish the nacelles with strip planking then complete the hatch installations. Make a fixture for the engine shaft to hold the cowl ring in place then frame up and sheet the cowl. Next, determine your cowl attachment method.

Assemble the other wing panel and sheet the bottoms of both panels. Place both panels on the dihedral fixtures shown on the plans (one for the root and one at each tip) to set the proper wing shape. There's zero degrees incident at the tips and positive two degrees at the root rib. Install the dihedral joints then epoxy the wing panels together and add the top wing sheeting to lock in the wingtip washout. I double sheeted the leading edges between the nacelles because that's where I hold the plane when I carry it. I also applied light fiberglass cloth and

SPECIFICATIONS

MODEL Convair CV-240/C-131 Samaritan

TYPE cargo/transport/airliner

WING AREA 950 sq. in.

WINGSPAN 82 in.

LENGTH 65 in.

FUSELAGE DIAMETER 8 in.

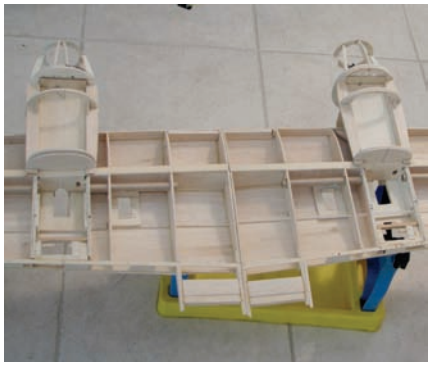
WEIGHT 12 lb. 6 oz.

WING LOADING 30 oz./sq. ft.

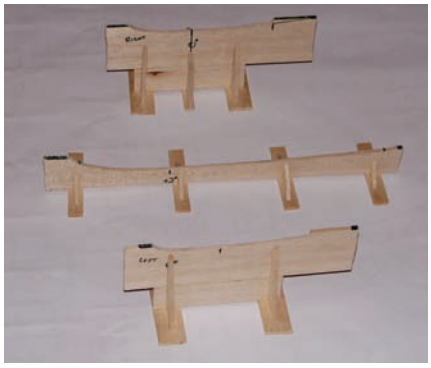
RADIO REQ'D 6-channel (rudder, throttle, elevator, aileron, flaps, retracts)

POWER two O.S. .32 SX

PROPS 11x6 APC (static props, Evolution 3-blade)

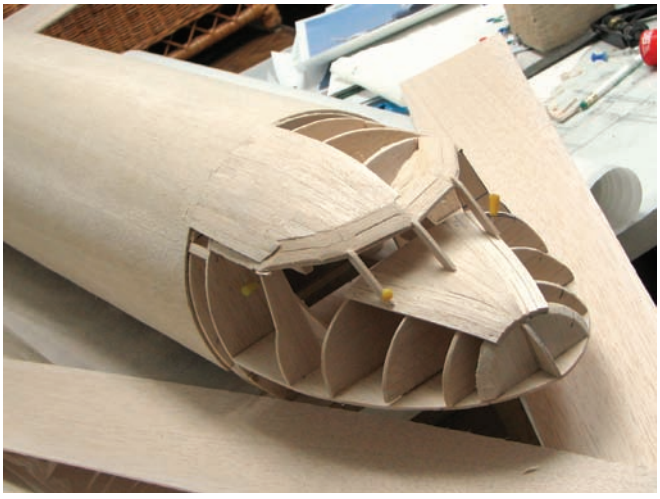


Here, the nacelles are being built-up around the ply nacelle doublers. Lots of strip planking is required to shape the nacelles and blend them into the wing.

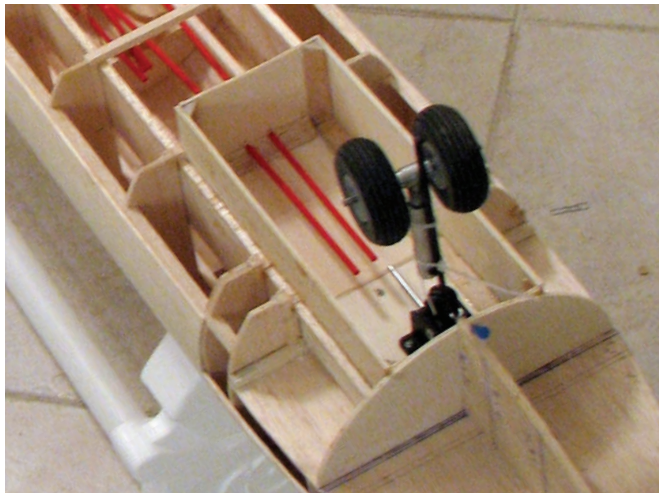


Before you sheet the top of the wing, place the panels on these dihedral fixtures. They set the dihedral angle and position the wings to form the proper wingtip washout.

The basic fuselage center section is built around these 5-inch-square frames. The subassembly is built pinned to the building board to ensure alignment, and quarter ribs are added to each frame to produce the formers.



The nose section is built onto the center section while it is still pinned to the building board. Here, the upper formers have been glued into place on top of the cockpit decking piece. Strip planking is used to sheet over the formers.



After the fuselage has been sheeted, it is removed from the building board and held in a foam stand to finish the bottom. Here, the wheel well box for the nose gear and the lower nose keel piece has been installed. More quarter ribs will be added to the fuselage frames to complete the formers.

place before installing F-23. Add stringers above and below the stabilizer slots to help support F-23 then install the F-22 former parts. A solid balsa tail cone will be added after the fuselage has been sheeted.

Build the rudder and vertical fin next, laminating five strips of 1/16x3/8-inch balsa to form its leading edge. Build the surfaces over the plans and leave the fin's spar and trailing edge extra long so that they can be built into the fuselage structure for additional strength. Sheet the surfaces with 1/16-inch balsa after the fuselage shape has been developed.

To develop the taper of the top of the fuselage, glue the top 1/4-inch-square (medium hard) stringer into formers F-18 to F-23. Add doubles to the sides of the stringer then cut openings in it to fit the fin's spar and trailing edge. Don't glue the fin into place until after the fuselage has been sheeted.

Check that the horizontal stabilizer is level and straight then glue it in place along with enough stringers to properly develop the tail shape. Sheet the tail about 1 inch above and below the stabilizer and about 1 inch to the left and right of the fin. Reinstall the vertical fin but do not glue yet. Align the fin with the stabilizer and cut the bottom of the fin sheeting to match the aft fuselage curvature. Later, this will provide a strong glue joint. Add internal bracing around the fin spar and trailing edge so you can reinstall it and epoxy it into place after the fuselage sheeting has been completed. Leave the fin off for now so you can finish building the fuselage bottom.

FORWARD FUSELAGE

Install the cockpit ceiling and brace it to the top fuselage frame stringers. Build and sheet the top of the cockpit above the cockpit ceiling. Install F-6 and the fuselage cockpit deck. Note that the cockpit deck is placed 1/2-inch below the main fuselage centerline. Install the forward top-half formers for the nose section then add the vertical keel support below the deck. Add the lower nose half formers to each side of the keel piece then start planking. After the planking is done, install the windshield frame supports and the filler blocks to the ceiling area forward of F-6 to blend the fuselage top into the windshield panes. Note that the former that aligns with the aft edge of the cockpit side windows has angled flat side sections to help blend the planking into the side windows. See the fuselage cross-sections on the plans. The nose cone forward of F-1 should be carved from a solid block of balsa.

FOR STATIC DISPLAY, I USED EVOLUTION 3-BLADE PROPS FROM HORIZON HOBBY PAINTED SILVER WITH SOME COLOR ADDED TO THE TIPS

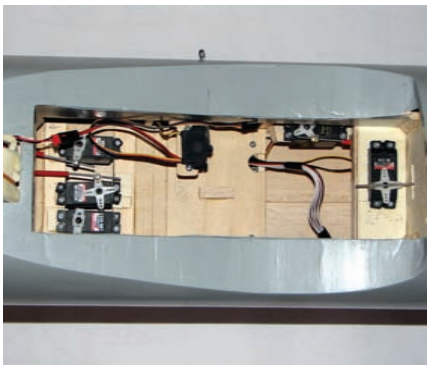
FUSELAGE BOTTOM

With most of the sheeting installed, the fuselage is rigid enough to remove from the building board. Support it with a foam "stand," install the wing saddle sheet from former F-5 to F-15, and then install the wing mounting supports and wing attachment bolt plates. Build and install the nose landing gear box, including hard 1/8-inch balsa sheeting inside the fuselage former frames. Install all the bottom quarter ribs on the central fuselage then build up the wing saddle section and finish the sheeting so it matches the top of the wing. Build the lower part of the nose from the landing gear box forward then finish the lower part of the tail. Install your servo trays and the elevator, rudder, nose gear, steering linkages and the retract linkage.

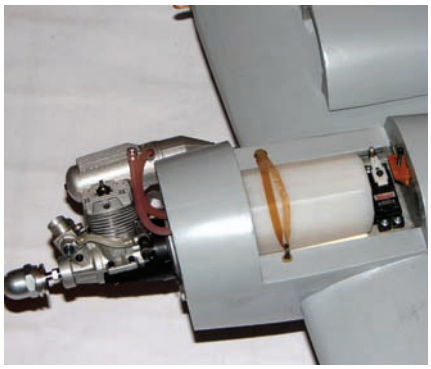
FINISHING UP

Sand, sand and sand some more. Shape the rudder and elevator fairings out of soft balsa. Install and test the retract units then make and install the ailerons and flaps. Practice your hinging skills!

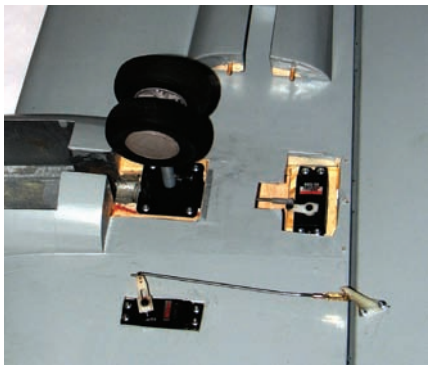
I used Flat Gray Monokote and white Ultracote to finish the model. Black side stripes cover the seams between the two colors. I used Major Decal markings for the fuselage markings and the wing insignia. I cut the 22 side windows from charcoal gray trim sheet and carefully stuck them in place. For static display, I use Evolution 3-blade props from Horizon Hobby painted silver with some color added to the tips. I also used O.S. muffler extensions to keep from cutting away too much of the engine cowls to clear the mufflers.



Here is the completed wing saddle section. Plenty of room for servos and radio gear.



Here, the engine cowl and fuel tank hatch have been removed to show the throttle servo installation.



The landing gear mount hatch is removable so you can get to the retract servo and retract unit for maintenance.

The six cockpit windshields are made from thin, clear plastic. Trim them to fit starting with the side, and glue them in place with white canopy glue. Install the aft side windows first then add the small middle windows and the front windshields.

The windshield supports are built after the plane is covered. White trim sheet hides the window joints. The two corner windshield supports are ⅛-inch-square hard balsa and are custom fitted into place. The center support is painted white and the cockpit interior is painted flat black.

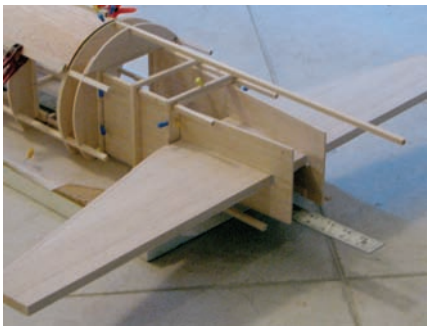
IN THE AIR

Keep the flaps up and taxi the Samaritan around until you stop shaking. Advance the throttles to clear the engines then slowly open the throttles. Just past ½ throttle the plane will start to fly, no lie! During my first flight the plane jumped off the ground in 40 feet and started climbing at a 30-degree angle with only ¾ throttle. You will probably never need full throttle except to clear the engines.

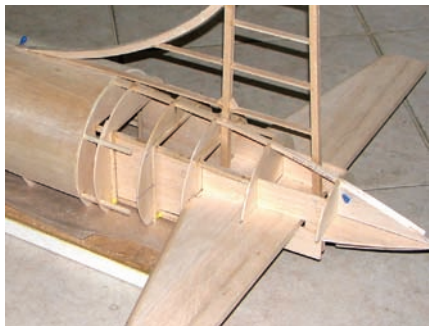
Climb a few hundred feet then trim the plane. Slow it down to check the stall characteristics. Mine just slowly lowered the nose and dropped a little with wings level, and this was at a very slow speed. Lower the flaps to ½ and determine the elevator trim adjustment you'll need, but make the adjustments after you land. With all the dihedral this transport flies like a trainer. It is very gentle and makes awesome low passes. I always raise or lower the gear during a low pass; no sense in wasting an opportunity to show off. My first landing was with no flaps, and it landed nose high like the space shuttle. With half flaps, it lands just a little nose high — really scale. I never use full flaps. If you maintain a moderately scale speed in the pattern and adjust the throttles slowly, you won't experience any surprises.

This plane always brings pointing fingers to the flightline fence. Spectators ask, "Are you really going to fly that after all the work?" I always reply, "Sure! That's why I built it."

See the Source Guide for manufacturers' contact information.



The horizontal stabilizer is attached to the tail with these two support sheets glued into the last two formers.



The support sheets are angled inward and the aft former pieces are added to complete the fuselage structure. The vertical fin has a laminated balsa leading edge.

The fin is sheeted after the top of the fuselage has been sheeted. Cut the sheeting so it matches the top of the fuselage. The trailing edge and main spar in the fin are built into the fuselage structure for strength.

resin between the nacelles to reinforce the center section.

FUSELAGE

The fuselage is assembled with a front, center and aft section. The center section is built first then the two ends are added later. The top ¾ of the fuselage is assembled while pinned to the work surface to ensure alignment. The bottom is left open to install an antenna tube, pushrods, servos, etc., after you remove the fuselage from the building board.

The center fuselage formers from F-7 to F-18 are perfectly round and each is assembled around a 5-inch-square frame made from ¼-inch-square balsa. I used an assembly jib to make sure the 13 center section frames were identical. Four "quarter rib" sections are then added to the frames to produce each of the round formers. Thirty quarter ribs, made from 3⁄32-inch balsa, are needed to form the circular center fuselage formers. Three more frames (and 12 quarter ribs) are needed for formers F-19 to F-21. However, these formers are smaller because of the reduction in fuselage diameter at these locations (see the Fuselage Side View on the plans).

Mark centerlines on all the frames so you can align them with a line drawn on the building board. Pin the frames to the board from former F-7 to F-21. Glue four very hard ¼-inch-square stringers in the inner corners of the frames while keeping the frames vertical and square. The stringers should protrude about 6 inches in the front and rear ends of the subassembly. To strengthen the fuselage, two ⅛-inch lite-ply stiffeners are glued to the inside of the frame sides from F-5 to F-15.

AFT FUSELAGE

Make the horizontal stabilizer and elevators then cut out the two vertical ⅛-inch balsa stabilizer support sheets to shape. Insert them into the F-20 and F-21 frames and glue in place. The aft ends of the supports must be angled inward before gluing former F-23 in place. Cut the stabilizer slots into the supports then slide the stabilizer into