

# THE GLOWDOG

A lightweight sport-scale Cessna L-19 that can glow in the dark!

THIS VERSION OF THE L-19 BIRDDOG was inspired by the many models made from the popular foam sheeting Depron. The construction technique I used (with the exception of the adhesives) is closely related to what balsa builders call standard. The foam sheets can be curled with the use of various size tubes and even have the properties of “grain” as balsa does. The difference is that the foam is translucent. My goal was to produce a stable, close-to-scale model with open spaces inside that I could light with small electric lights for night flying—hence the name “Glowdog.”

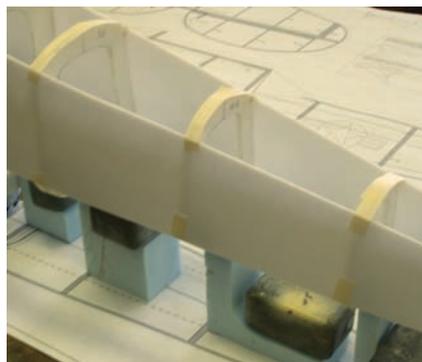
Construction starts by marking the fuselage-side skins. I punctured the plans with T-pins at the points indicated with the 3mm sheeting placed under the plans. This produces a point-to-point pattern. Formers 6 and 7 are cut from the patterns and carefully marked with their centerline and fuselage side sheeting contact points. These are the only formers that are bonded 90 degrees to the fuselage side sheeting. Polyurethane adhesive is used throughout for its light weight, holding power and ability to fill voids through its foaming quality while it sets up—use it sparingly!



The fuselage side skins are marked on the edges to locate the former positions from the side view. The first two formers are then bonded in place using weights for clamp pressure.

With the fuselage on its back, I used weights to hold the assembly on the top view aligned with the centerline. I used L-shaped foam blocks (attached with two-sided tape) to hold the remaining formers in position over the plans. Masking tape was used to hold the fuselage side sheeting against the formers while the glue set. I assembled the aft end first. While the adhesive set up, I cut the formers for the front as well as the gear plates. Be sure that the landing gear wire is bent correctly and measures evenly from the work surface when installed in the fuselage.

While the fuselage was being held in position over the plans with the L-blocks, I curled and cut 3mm foam sheets to fit between the formers working from the gear wire fore and aft. A minimum amount of adhesive is needed on the sheeting edges. I used ¼-inch masking tape to hold the panels securely in position. With the belly sheeted, the fuselage is strong enough to turn over and remove the L-block supports. The horizontal stabilizer is now needed to hold the tail true before sheeting the fuselage top.



The formers are held in position on the centerline with foam blocks and two-sided tape. Masking tape holds the skin against the formers while the glue sets.

## SPECIFICATIONS

**MODEL:** Glowdog  
**TYPE:** Sport scale  
**WINGSPAN:** 72 in.  
**LENGTH:** 50 in.  
**WING AREA:** 687 sq. in.  
**WEIGHT:** 3 lb.  
**WING LOADING:** 10.06oz./sq. ft.  
**RADIO REQ'D:** 4-channel (throttle, ailerons, rudder, elevator) lights optional  
**POWER REQ'D:** 280-size brushless outrunner

## GEAR USED

**MOTOR:** E-flite 280 1020kV outrunner (e-fliterc.com)  
**ESC:** Castle Creations 25A Phoenix (castlecreations.com)  
**PROP:** APC 11x7 (apccprop.com)  
**SERVOs:** 4 Hobbico CS12s (hobbico.com)  
**BATTERY:** 11.1V 2100mAh LiPo

## CONTROL THROWS

**AILERONS:** ± ½ in. (low); ± ¾ in. (high)  
**RUDDER:** ± 1 in. (low); ± 1 ½ in. (high)  
**ELEVATOR:** ± 1 in. (low); ± 1 ½ in. (high)

## TAIL GROUP

I assembled the tail feathers by building a frame with one side flat against the work surface while the exposed top side had the airfoil shape cut into it. A 3mm, laminated edge support completed the framework. I applied beeswax to the hinge line to prevent bonding and then, after some light sanding, the frames were ready to be sheeted. If you use a piece of foam rubber in a blotting motion, applying the adhesive goes quickly. Weights supply pressure over the ribs working from the center outward. Heavier weights were needed to force the edges down to the meet the edge support.

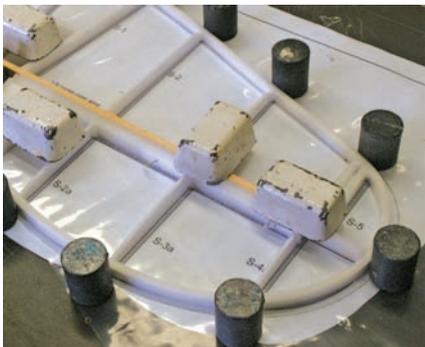
## NOT ONLY IS IT A NICE, EASY-TO-FLY PARK FLYER, BUT IT'S ALSO A GREAT NIGHT FLYER



Whether flying by day (above) or at night (below right), the Glowdog is always a joy to fly.

Forming a “bridge” with sticks between the worktable and sheeting edges allows pressure to be concentrated in difficult areas. Allow the tail group adhesive to dry overnight.

Use a razor to trim away the excess sheeting from around the tail surfaces about ¼ inch from the edge support. Save the material for later use. I used a sanding block to shape the frames to match the airfoil shape on the other side. Most of the edge support was removed and I stopped sanding when the sanding bar started to sand the sheeting edge. I cut the control surfaces free, did the hinge work and installed LED wiring. After all the wiring tested out fine, I was ready to close everything up.



Just as with balsa construction, the tail group frame is assembled over plastic to protect the plans. Weights are used to hold the parts in place.



With the tail group lying flat on the work surface, I used the scrap sheeting to support under the outer edges and repeated the sheeting process. After the



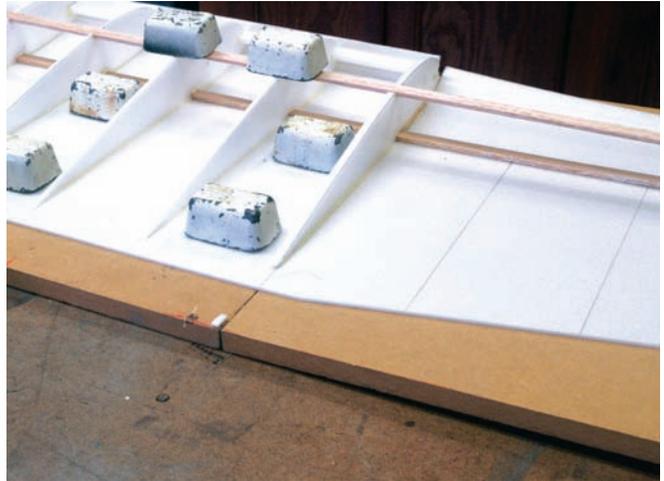
Foam sheeting is fairly soft material, so weights around the edge and center are enough to attach the sheeting to the tail group frames.

glue had set, I roughly trimmed the edges then sanded them smooth. A razor is used to separate the control surfaces. Using the balsa spar to guide the razor makes this step easy—just be careful not to cut the LED wiring. I then bonded the horizontal stabilizer onto the fuselage’s tail, wired the LEDs and installed the control pushrods. With the landing gear wire sitting flat on the work surface, I checked the top of F-6 was level and then supported the stabilizer with equal height blocks to remove any twist from the structure before sheeting the top of the fuselage.

Next, I cut off the tabs on F-7 that supported the fuselage while it was inverted and completed the wing saddle. To wrap things up, I installed the battery tray and



With the power system attached to the firewall, the scale opening in the engine cowl provides excellent cooling.



The wing is assembled on a building board angled to the correct amount of dihedral.

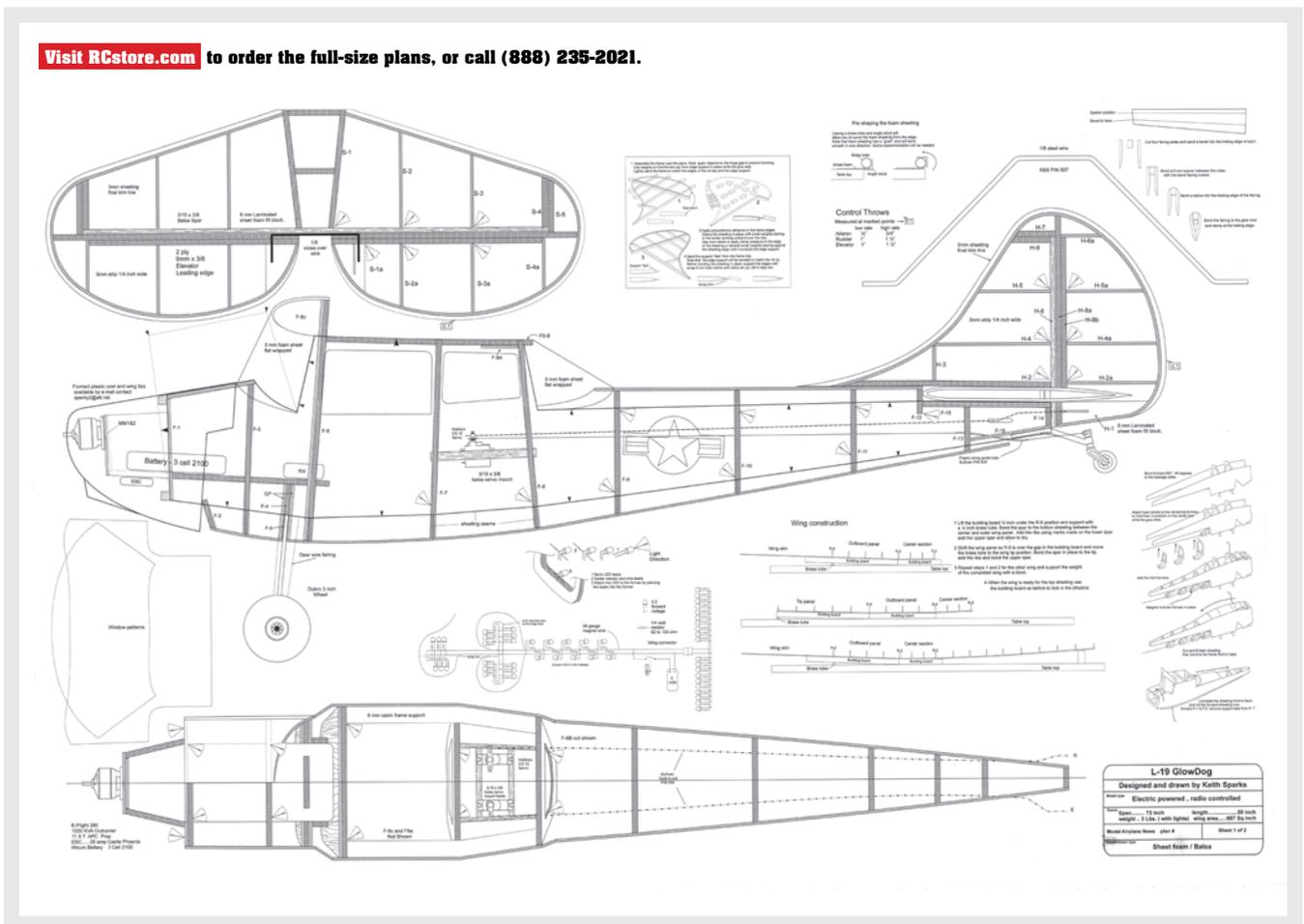
motor mount components. The formed plastic cowl and formed wingtips for the Glowdog are available by contacting me at sparky2@att.net. The cooling holes in the cowl are perfectly placed in order to cool the Castle Creations ESC and lighting system BEC.

**WING ASSEMBLY**

The building surface used was two pieces of equal thickness wood with one end elevated 1/2 inch to form the needed dihedral. Each panel pair was centered over the building board pivot point until all the ribs were in place. Assemble the wing structure on

top of the lower sheeting. Marks were made on the spars and the top of the sheeting to locate the rib positions. Cut the wing sheeting to size using the same method used to cut the fuselage sides. Be sure to curl the wing sheeting so the leading edge matches the rib curves.

Visit [RCstore.com](http://RCstore.com) to order the full-size plans, or call (888) 235-2021.



After I installed the aileron servo leads and LEDs, the process was repeated to bond the top wing sheeting in place. Pre-shaping the top sheeting leading edge is again needed. Note that the 6mm aileron leading edge material is installed at an angle to minimize sanding.

Marking the wing's aileron cutouts is as easy as holding the wing up to a bright light. After a little light sanding, the ailerons are ready for hinging task and installing the wingtips wrapped up the wing construction.

**FINISHING UP**

Bending the front and aft window material was a tedious task with many test fits needed; just as you would with flat clear plastic. The difference is foam sheets hold their shape better. The patterns shown on the plans should get you close enough. I used bass wood to make the wing struts and bonded fiber hinge material into slits cut in the tips. Screws attach the struts to their attachment points on the fuselage while

**DID YOU KNOW? KEITH SPARKS**

Known to his flying buddies as "Sparky," Keith Sparks has a long and interesting modeling history. He grew up flying rubber-powered models and powered free-flight planes and went on to join the U.S. Air Force in 1976. We had a chance to catch up with Keith and here's some of what we learned.

**When did you first get involved in RC?**

On my 28th birthday, I got my first 4-channel radio. Three trainers and one engine later, I soloed.

**How many models have you built?**

I started marking my models with large tail numbers so the guys training me would know how many models I'd been through learning to fly. This turned into a running joke with each new plane I brought to the field and continues to today, I'm at 200 RC models to date.

**Tell us about your love for foam construction.**

My first foam-based model went from an idea to flying model so fast that some of my wood-based designs were foam prototypes. I continued developing my foam building skills, learning from my mistakes for another 15 years. I found myself explaining how to build with foam at every fun fly I attended and this prompted me to write the book *Building with Foam*.

**What about your website?**

Parkflyerplastics.com started as a designer/kit bashing site, a place where guys could get things that I needed long ago. I was pleasantly surprised to find that ARF builders too had the desire to kit bash their models so I do what I can to help them as well.



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When bent, sheeted foam will hold its shape more than clear plastic. This makes window installation actually easier than what balsa builders are used to.



Flip a switch and the nighttime flying light system can change colors.

the other ends are bonded to the wing. I believe the model could be flown without the struts in place, but any aerobatics should be avoided.

#### IN THE AIR

Despite its six-foot wingspan, the Glowdog handles surprisingly like a park flyer.

Takeoffs and landing requires very little space, which allows the Glowdog to be easily flown from neighborhood soccer field-size areas. The 3-inch wheels have no problems handling rough terrain during takeoff rolls or landing. Stall recovery only takes a foot or two to recover from and loops are effortless. Due to the model's

inherent stability, rolls are a chore. Basic flight is rather boring until the sun goes down and I light up the interior. Do your local law enforcement a favor and keep your night flights short!

For more photos and details for the onboard lighting system used in the Glowdog, go to [modelairplanenews.com](http://modelairplanenews.com). ✚

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WINGSPAN: 47.5 in (1205 mm)  
WEIGHT: 37.0 oz (1050 g)  
LENGTH: 39 in (990 mm)

