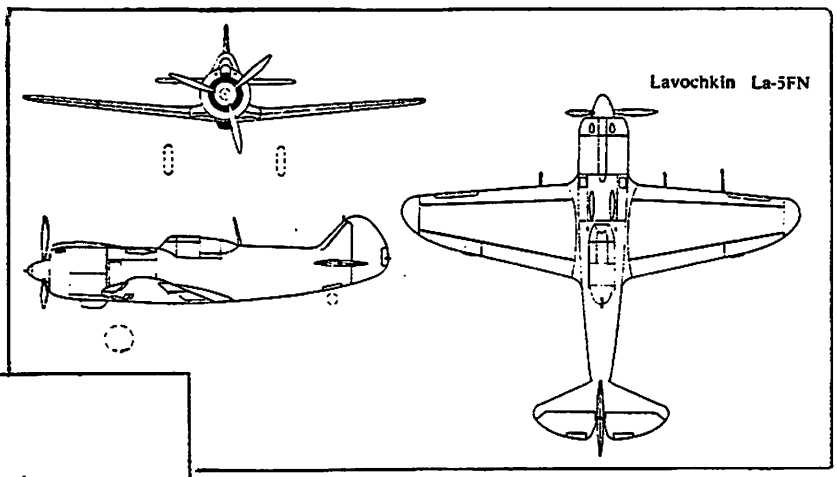
CROSSWINDS

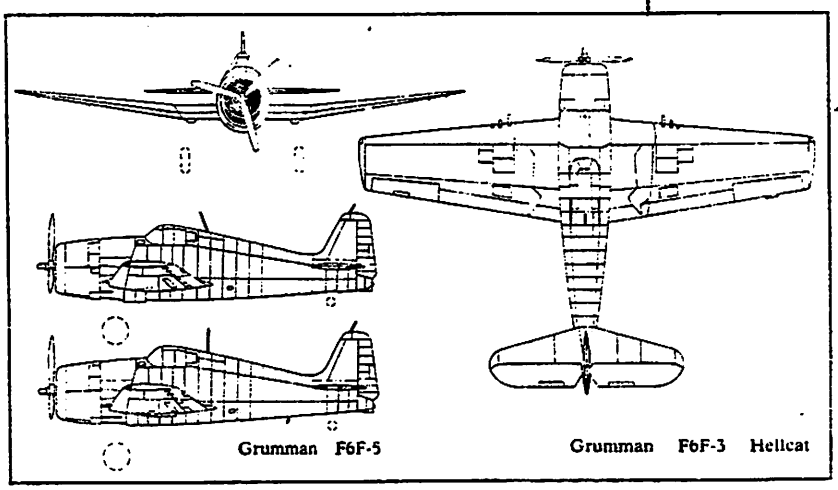
#105

Lavochkin LA-5
Grumman Hellcat

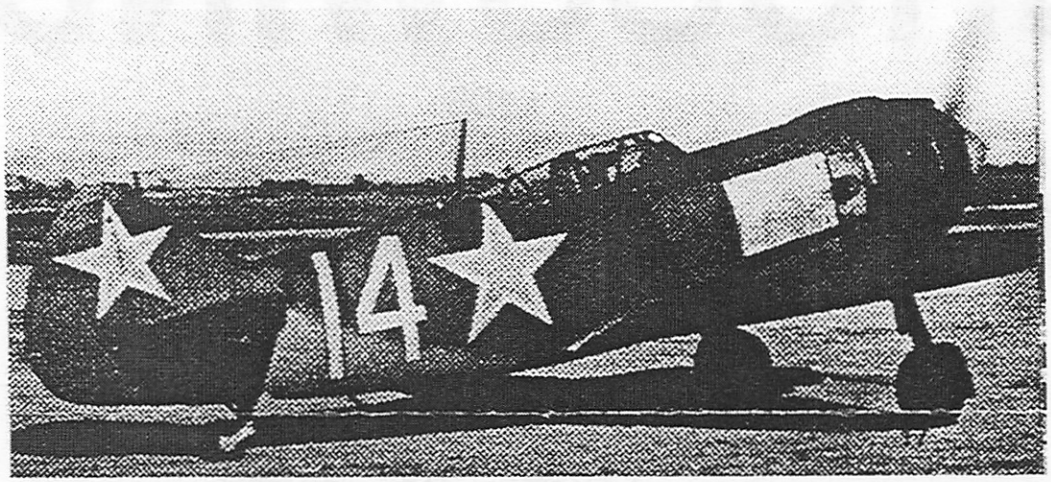
2003 Contest Calendar



CROSSWINDS
RUSS BROWN
4909 N. SEDGEWICK
LYNDHURSt, OHIO 44124



The Lavochkin LA-5 & LA-7 Series Soviet Fighter



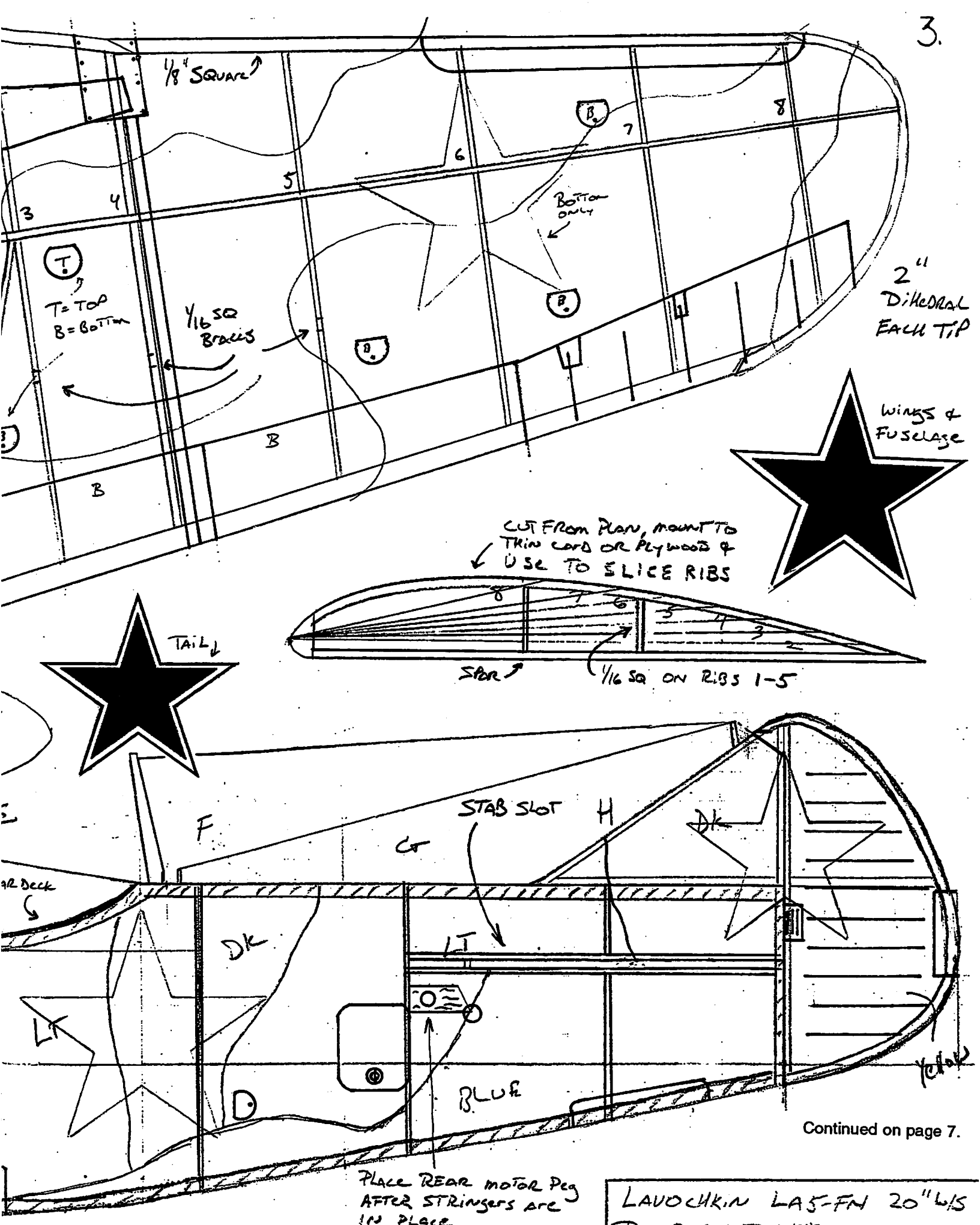
In typical Russian fashion, the LA-5 series was born as a low-tech response to a crisis situation resulting in an outstanding example of Russian ingenuity. The existing LaGG-3 currently in service was proving to be as good a killer of Russian pilots as were the Germans and the Soviets needed to make an improved fighter quickly. They wanted to take advantage of the M-82 radial engine currently being produced in a facility out of range of German bombers and also wanted to make use of the LaGG-3 design work not necessarily to make it safer for pilots but to utilize the investment already made. The plan was to marry the radial engine to the in-line engine airframe. The results were much better than expected.

In comparison to other contemporary aircraft, the LA-5 series stood out as a fighter with equal or better performance using decidedly low-tech materials and construction methods. The aircraft was entirely made out of wood from the engine rearward until late 1943 when the LA-7 design came out which substituted the wooden wing spars with ones made from metal. The advantage of this strategy was that the aircraft could be built using local craftsmen of readily available non-strategic resources without special production processes. The disadvantage was that the aircraft had a predicted life of only about 2 years after being exposed to varying weather conditions such as rain and cold typically found at the forward, rudimentary airfields. However this too was part of the accepted design envelope because it was assumed that the aircraft would be written off before it could become unsafe due to rot. And in fact, the Soviet Union supplied Czechoslovakia with LA-5FN's but would only guarantee the airframe for a period of two years and later declared virtually all LA-5 aircraft as non-airworthy because of the wooden construction.

The LA-5 development process began with the original LaGG-3 airframe with the high back spine aft of the cockpit. The radial engine was married to this airframe with changes limited to those required for the support of the new power plant. These models can be distinguished by the small windows directly behind the sliding portion of the canopy. In March 1943, the LA-5F was first produced with the M-82 engine replaced by the ASH-82F supercharged engine, the rear of the fuselage had been cut down and a redesigned canopy had been fitted to improve the pilot's view behind the aircraft. In March 1944, after a major wind tunnel test program for the LA-5F the LA-7 design was put into production. Through careful refinement of the airframe the result was a top speed improvement of 31 MPH at 20,000 feet. The top speed for this wooden wonder was 425MPH! A total of 21,975 LA-5FN and LA-7 models were produced before the end of the war. From the modeler's point of view, the LA-7 is almost interchangeable with the LA5-F with the changes being limited to the location of the oil cooler air scoop and the engine air intake.

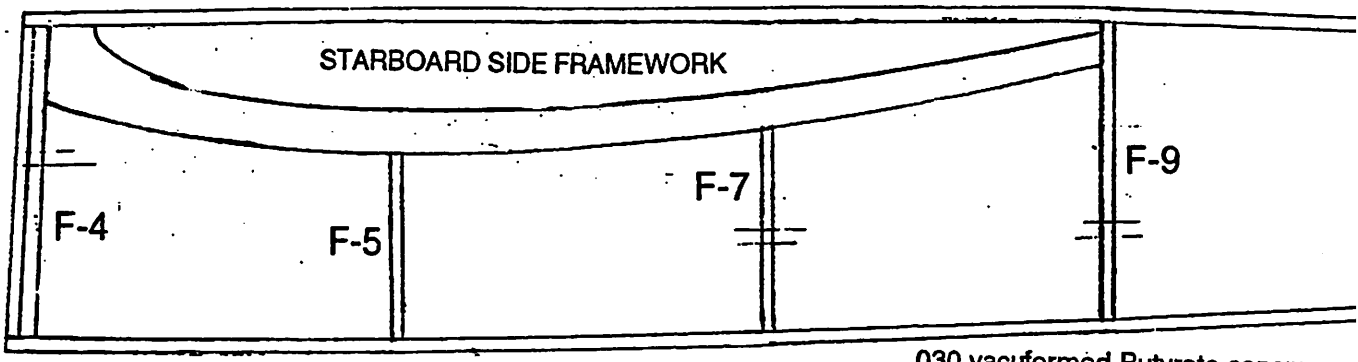
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Geoff Phillips



Continued on page 7.

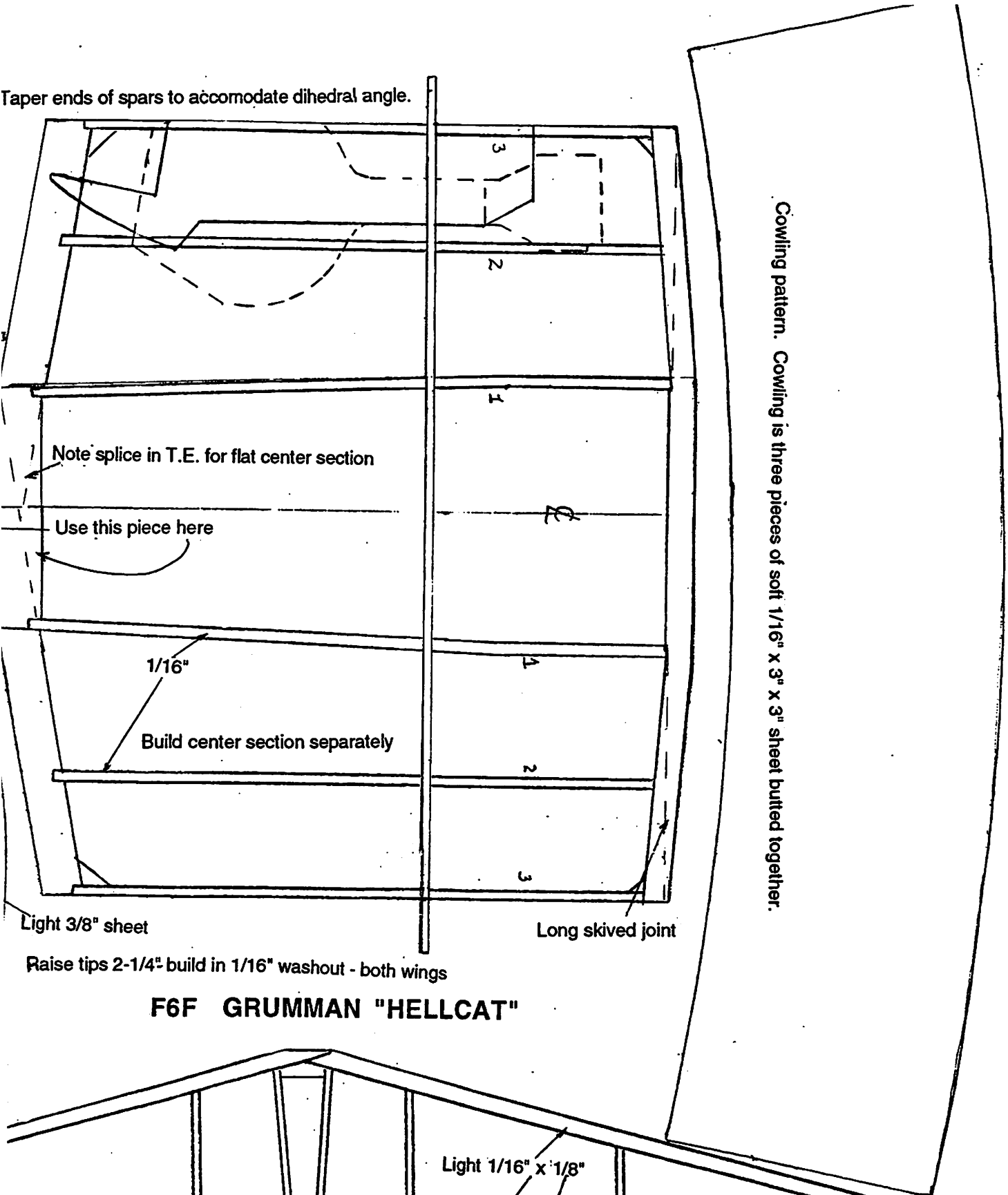
LAVOCHKIN LA5-FN 20" L/S
BY GEOFF PHILLIPS 3/28/03
FOR CROSSWINDS



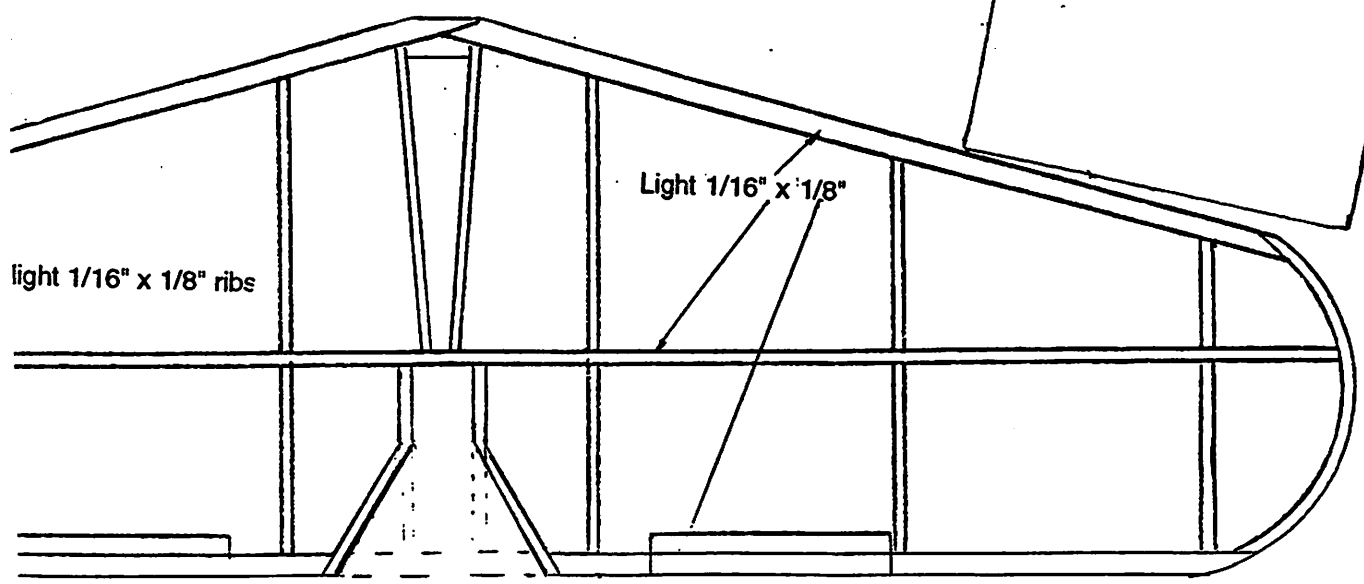
.030 vacuformed Butyrate canopy

Wrap cowling around formers C1 glued with Titebond, then insert six spacers and finally C2.
Strap 1/16" sheet tightly with rubber bands directly over C-1 and C-2 till Titebond dries.
When dry, trim and sand cowling cover flush to C-1 and C-2, then add C-3, sand and seal.

F-7T
F8
F-9
Removable 1/32" ply face plate, 1.75" dia.
F-5T
F-4T
F6
C-1
1/20" sq. 1/16" sq.
Six equally spaced 1/16" x 1/8" spacers, 1-5/16" long
PORT SIDE FRAMEWORK
C-1
C-2
F-4
F-5
F-7
F-9
C-3
1/4" hard balsa key
firm 1/2" thick bearing block
Saddle is two laminates 1/8" soft, each side
F-4B
F-5B
F-7B
F-9
Soft 1/16" sheet cowling; see pattern on plan
Plank with soft 1/16" sheet between lower longeron and adja
Landing and arrestor gear is to be shown retracted for flying model.
Check decalage before flying - It should be 2 to 3 degrees positi
downthrust and 2 degrees right thrust. Power with two loops of



F6F GRUMMAN "HELLCAT"



GRUMMAN F6F HELLCAT

Dave Diels presented CFFS members with a beautiful gift plan of the F6F at our holiday party in December 2001. His plan was slightly modified from that by Bill Hannan which appeared in the book "Flying Scale Models of WWII" published by "Model Builder" magazine. Dave provides a complete kit of the F6F (kit #12) and will sell a set of decals and a preformed canopy for it (C12 and D12) if you contact him at P.O. box 263 Amherst, Ohio 44001 Phone (440) 984-2274.

Since Dave took the liberty of making a few revisions to the Hannan plan, I felt free to make additional modifications to both plans to feature a little different type of construction!
Basically, I changed the split half fuselage construction to a box type with the four longerons serving as stringers. In addition to this, I used semi circular formers instead of 1/16" square for the box structure uprights as I did in my model of the Lockheed "Altair". This construction is lighter and stronger than the split half type because it avoids most of the weak grain of the half formers. It does, however, require a separate drawing for the two fuselage frames because the semi circular uprights have depth. I also changed the wing, and stabilizer construction, using a carved leading edge on the wings for simplicity, a thinner airfoil and simplified spar usage. The stab. was made thicker to resist warps. The wing saddle was redesigned and the engine cowling was made by wrapping 1/16" sheet around front and rear formers and sanding it to a slightly curved profile instead of being built up of stringers and tissue as on the Hannan and Diels plans.

Be sure you build in a little washout in both wings and use enough dihedral to make the model stable. A good rule of thumb for low wing models is to elevate the wing tips so they are at the level of the bottom edge of the canopy. Before your first flight check the wing to stabilizer decalage. It should be about 2 degrees. You will probably need a fair amount of downthrust too. Start with about 3 degrees.
My model, without rubber, weighed 40 grams. Not light, but fairly sturdy. Try four stands of 3/16" x .040 rubber and a 8" prop with a P:D ratio of 1.3:1.

If you want to use colored tissue, a domestic dark blue is available from Easy Built Models, but chalking light blue Japanese tissue might be a better solution unless you are proficient with airbrushing. The bottom of the plane was sometimes white blended into light blue, but the top side was usually a royal blue. I obtained a very smooth finish on the cowl with two coats of sanding sealer and spray applied blue Krylon. The Decals from Diels are very thin, but can be applied successfully if you let them soak in water until they slide off the backing paper freely.

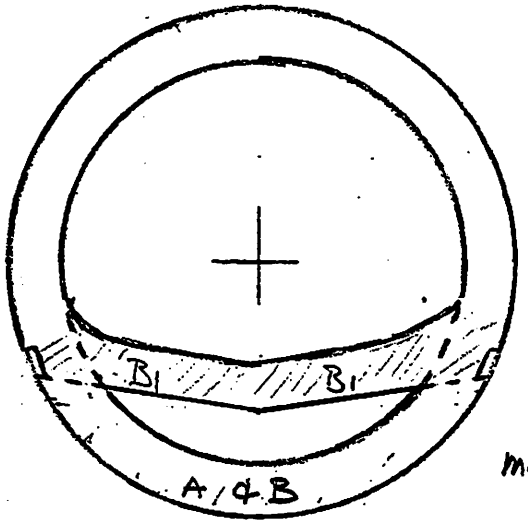
The Hellcat was a direct descendant of the Wildcat and first flew on June 26, 1942. This first version was powered with a 1700 Wright R-2600-10 Cyclone but was soon re-engined with a Pratt& Whitney R-2800-10 Double Wasp to become the XF6F-3 on July 30, 1942. By October they were in production and began appearing with the British Fleet Air Arm in July 1943 and in August with the U.S. Navy. Production for the U.S. Navy totaled 4,646 and an additional 205 were produced as night fighters for the British. In 1944 the F6F-5 entered production as a fighter-bomber with under wing weapons. It was powered with the R-2800-10W of 2,200 hp using water injection. By Nov. 1945 12,272 Hellcats had been manufactured, nearly 1/5 being night fighters.

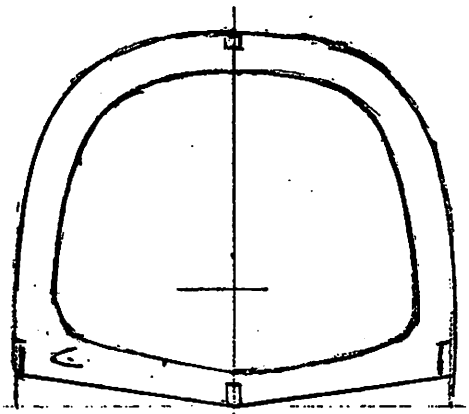
The Hellcat was credited with nearly 5000 victims of which 80% were destroyed in air combat by USN carrier pilots.

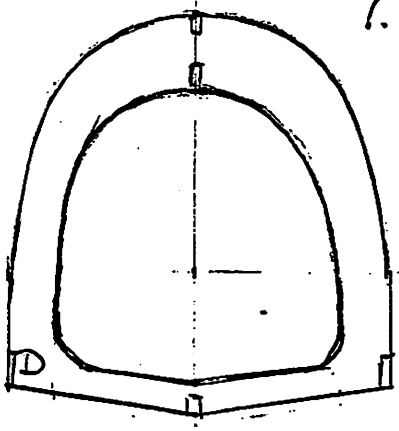
References: "The Pocket Encyclopedia of World Aircraft in Color" by Kenneth Munson, "The Vital Guide to Fighting Aircraft of World War II" by Karen Leverington, "The Rand McNally Encyclopedia of Military Aircraft" by Angelucci, "The Complete Book of Fighters" by Green and Swanborough, "Grumman Hellcat" Kit #12 model plan by Dave Diels and Bill Hannan.

Steve Griebling

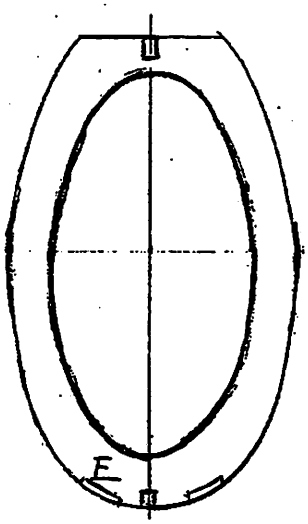
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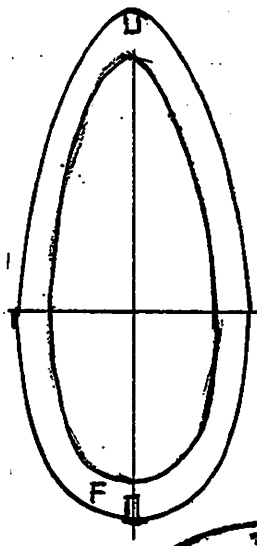


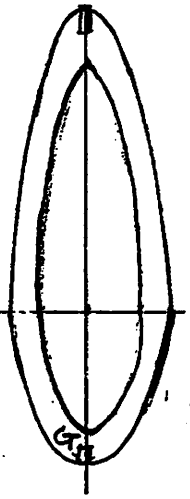


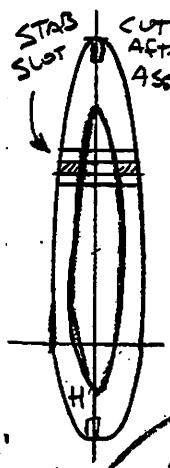


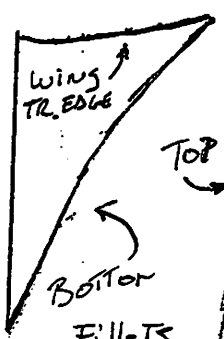
MAKE FORMERS FROM 1/16" BALSA



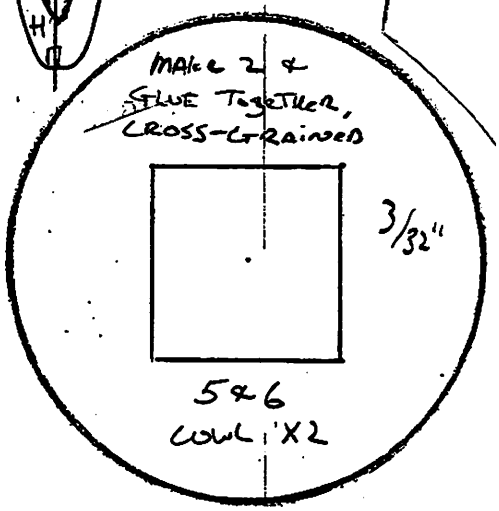


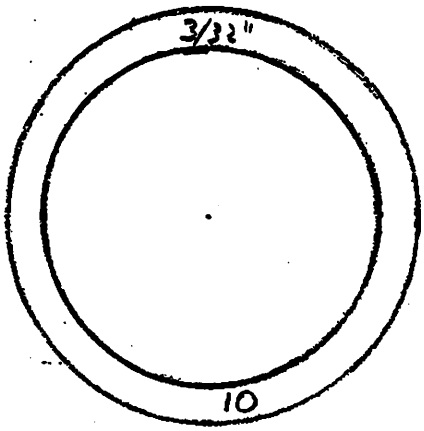


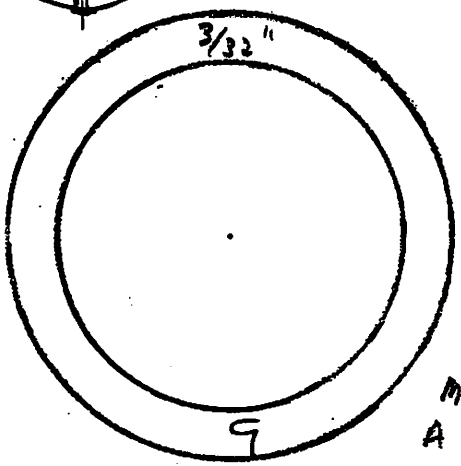




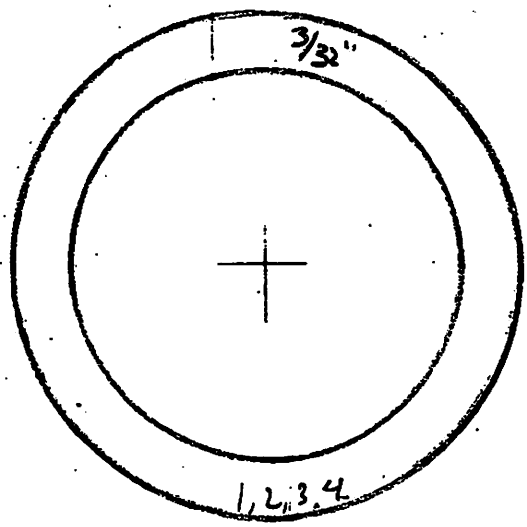


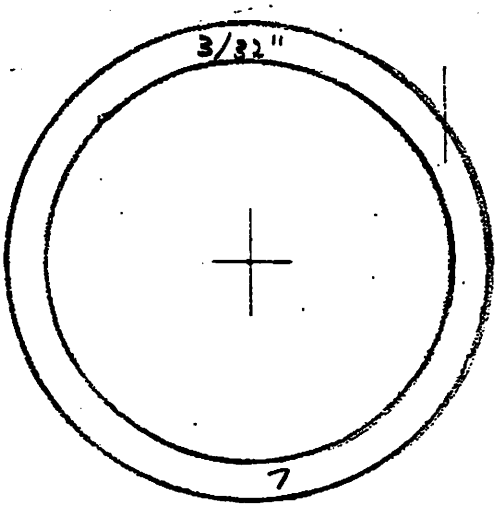


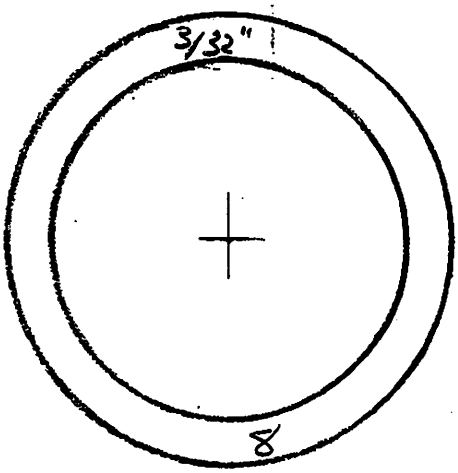


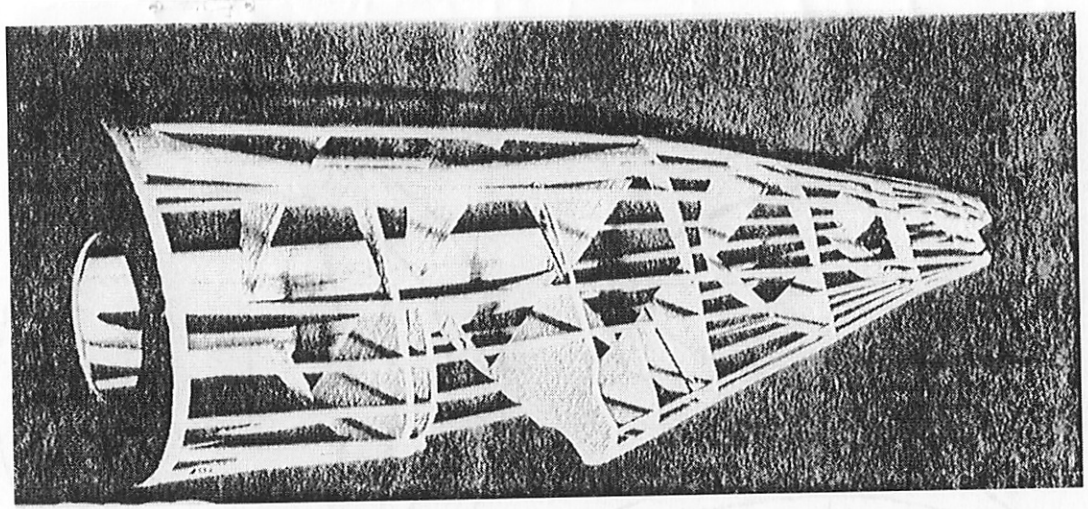


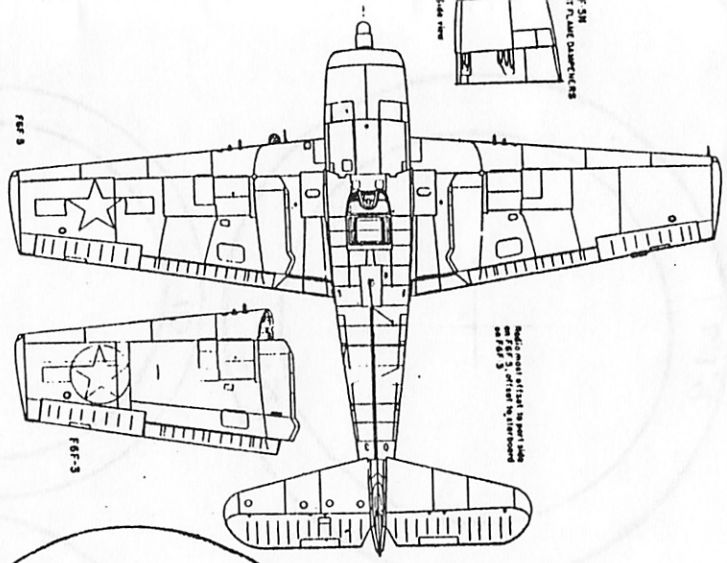
MAKE COWL PARTS FROM 3/32" BALSA
A CIRCLE CUTTER WORKS GREAT!



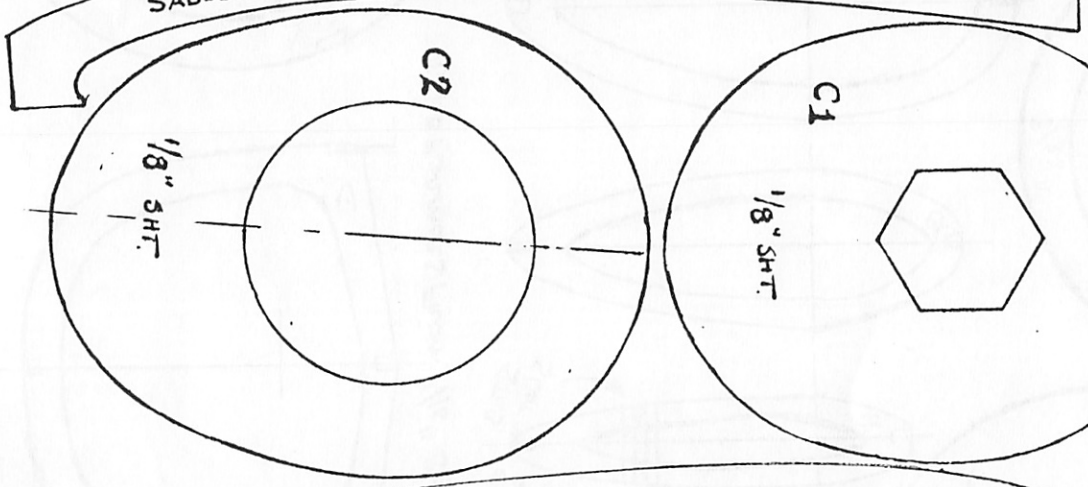


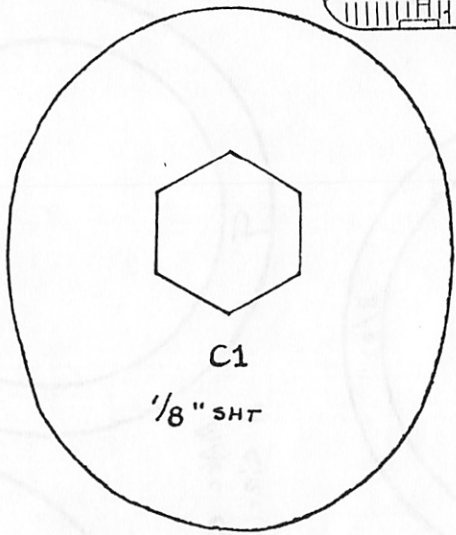


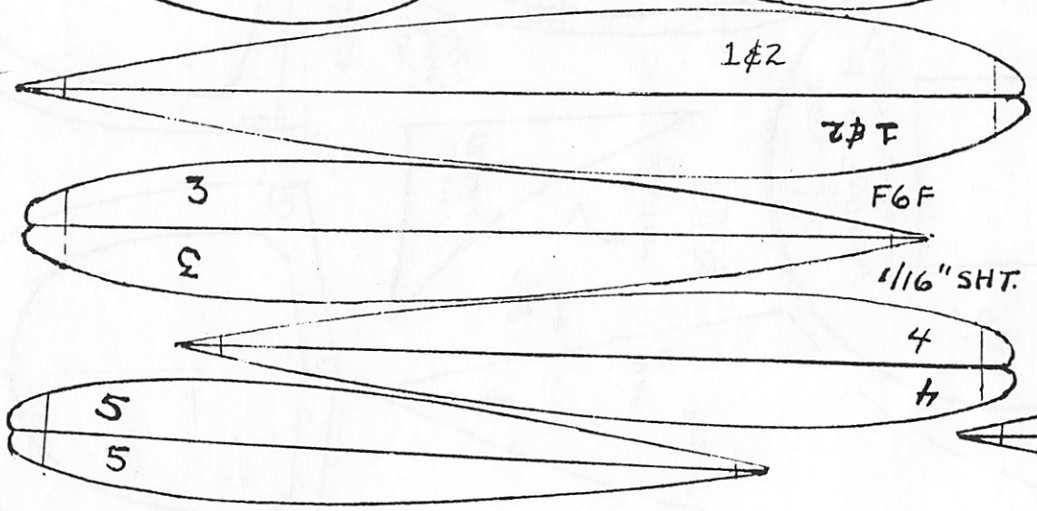




SADDLE 4 REQ'D. 1/8" SHT.

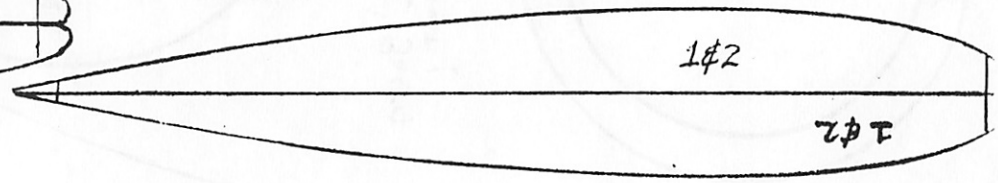


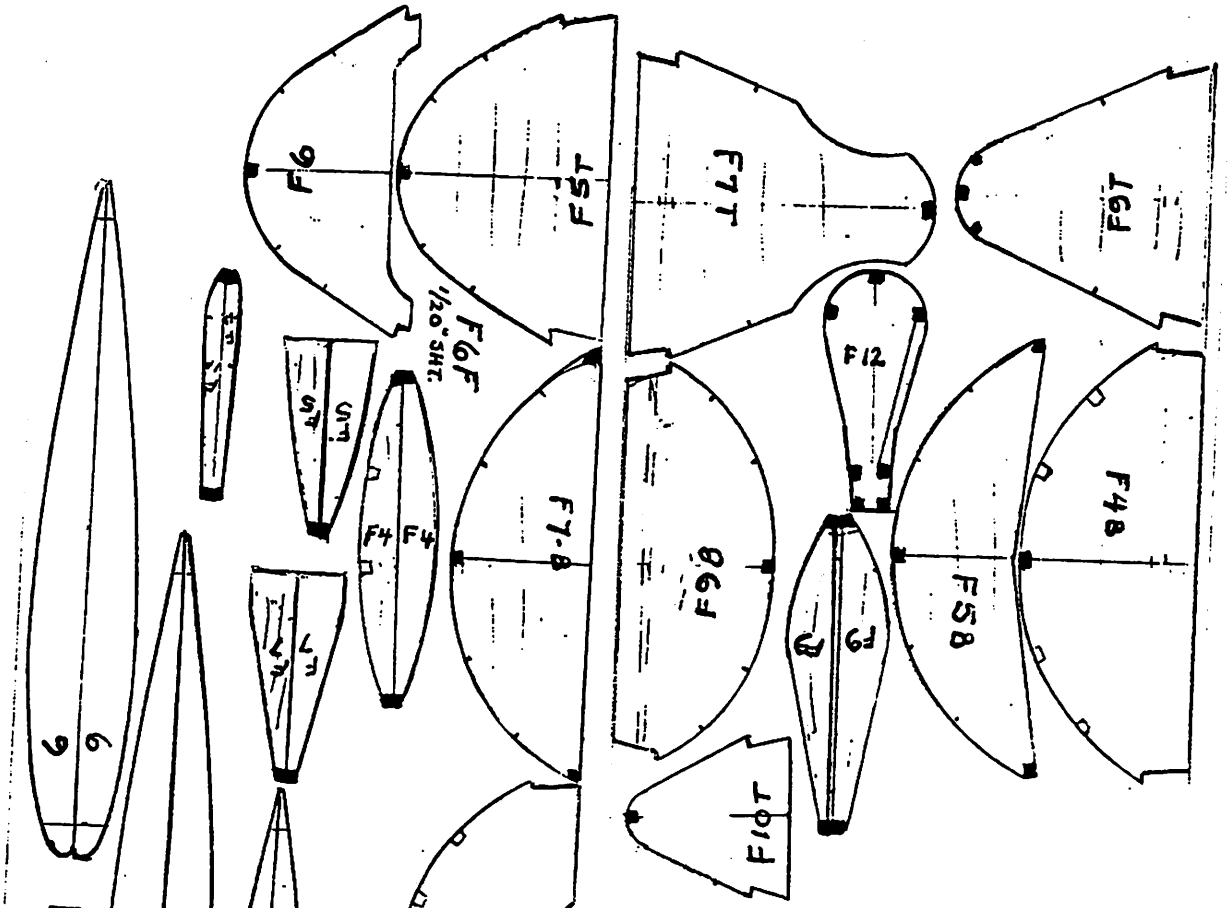


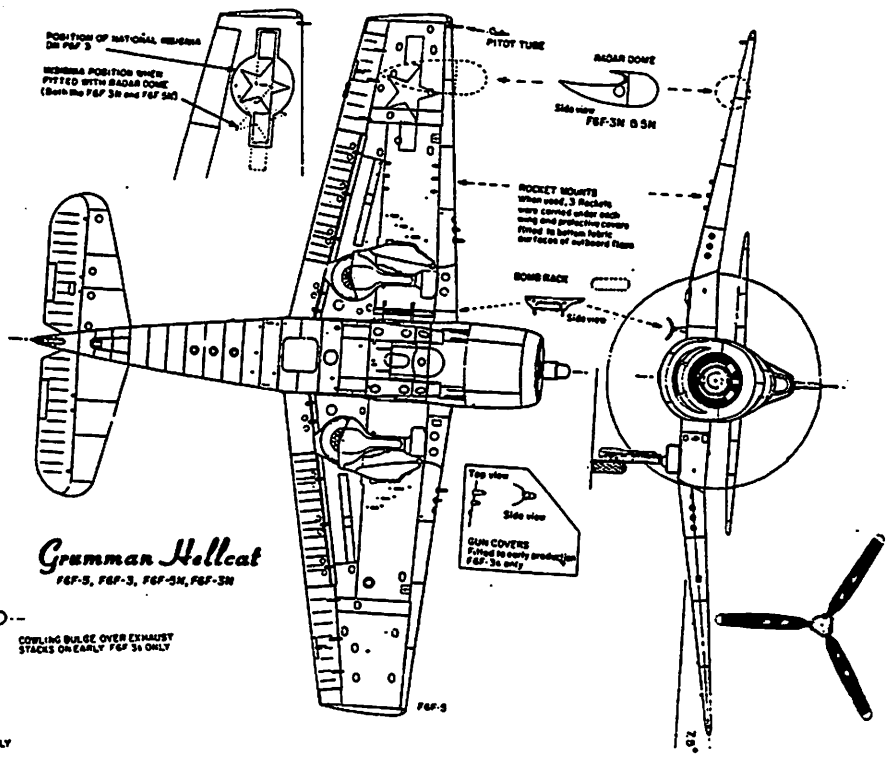


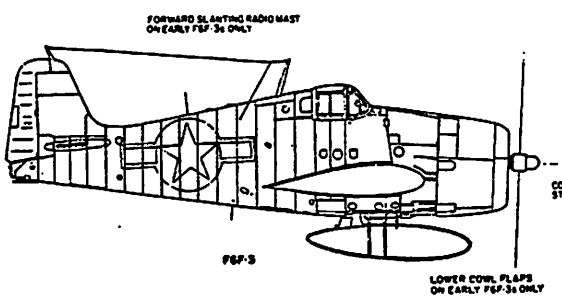


HELLCAT PARTS

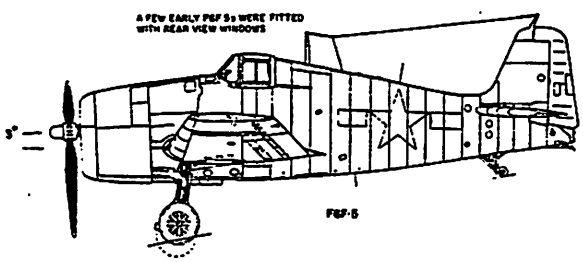


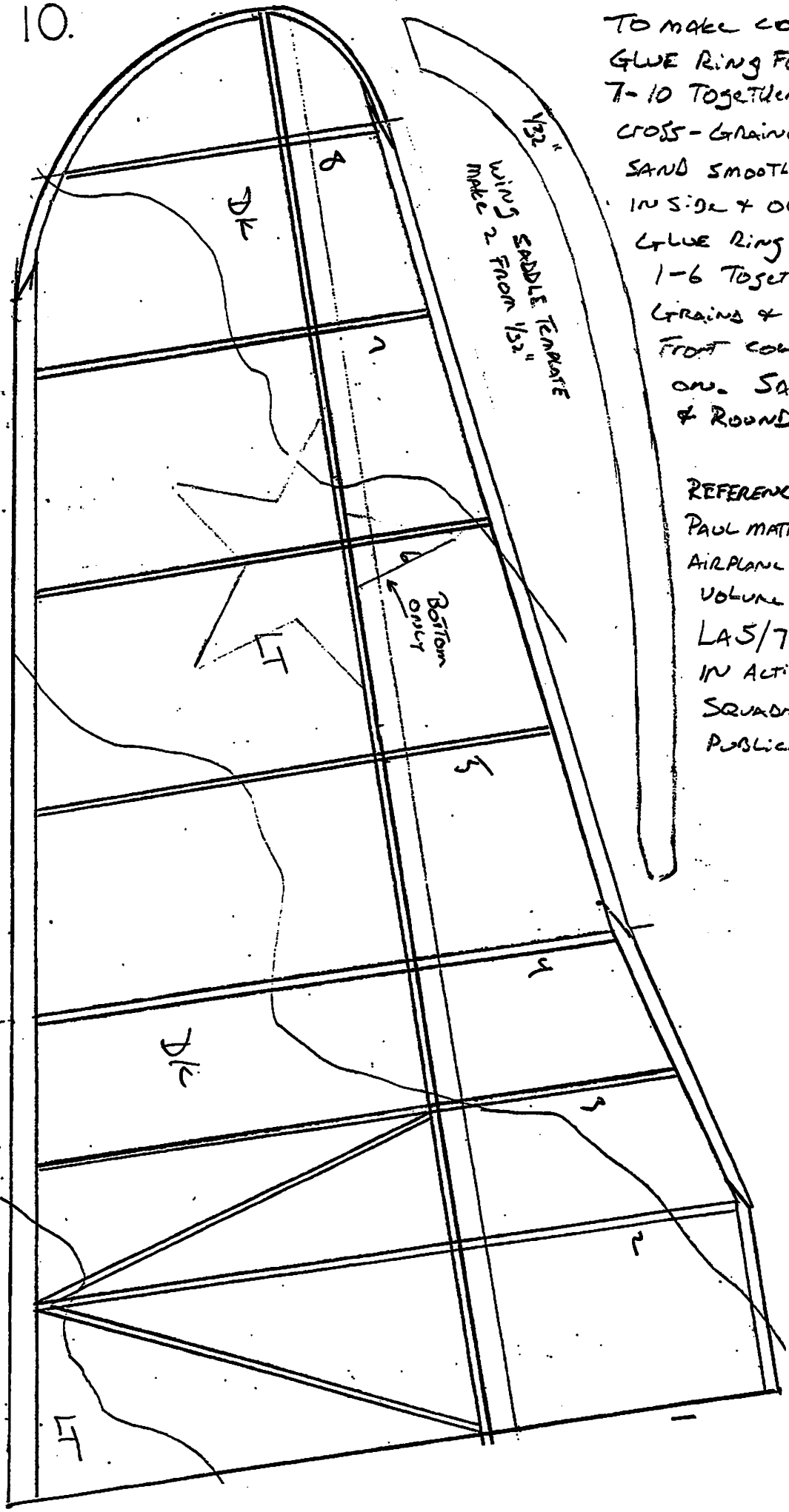






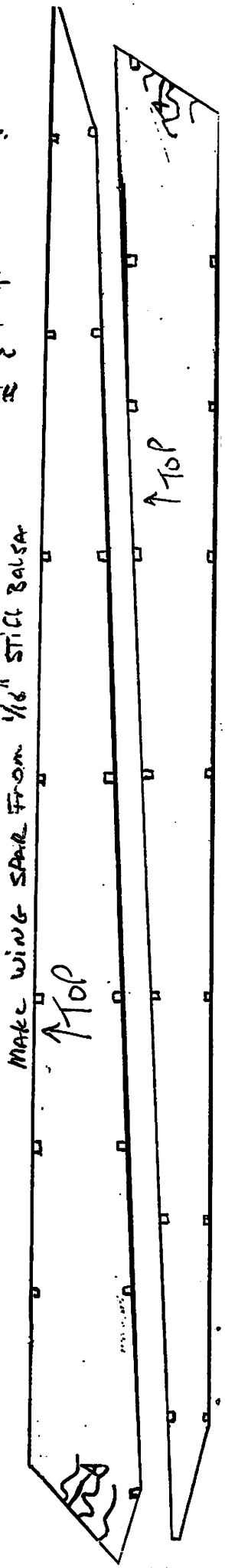
3-Views Courtesy of
Grumman Corporation





TO MAKE COWL GLUE RING FORMERS 7-10 TOGETHER IN CROSS-GRAINED FASHION. SAND SMOOTH & ROUND INSIDE & OUT. THEN GLUE RING FORMERS 1-6 TOGETHER CROSS-GRAIN & GLUE THE FRONT COWL SECTION ON. SAND SMOOTH & ROUND.

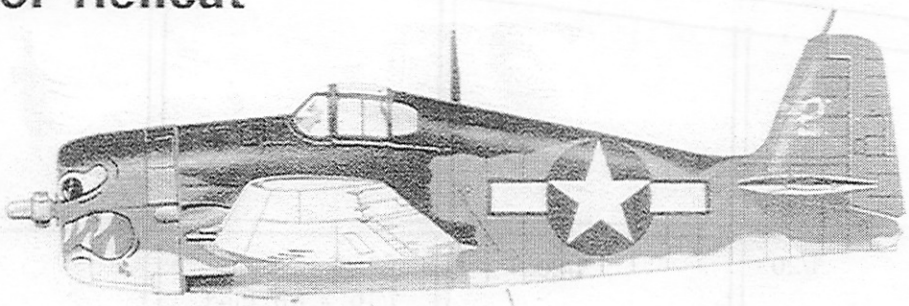
REFERENCES:
PAUL MATT'S SCALE AIRPLANE DRAWINGS VOLUME 2, LA5/7 FIGHTERS IN ACTION - SQUADRON/SIGNAL PUBLICATIONS



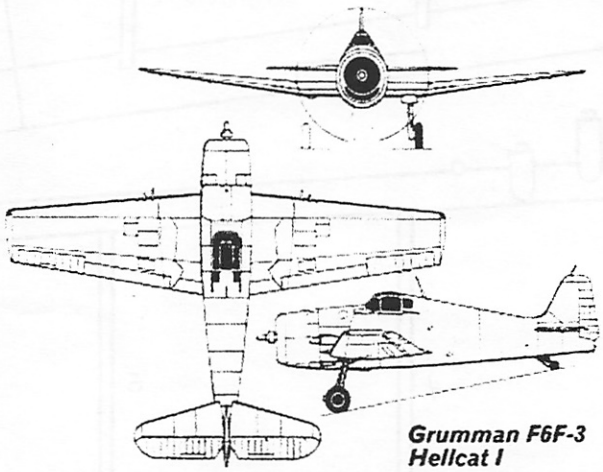
USA: Fighter

Grumman F6F Hellcat

For an aircraft that only entered service two years before the war's end, the production total of 12,275 Hellcats was a remarkable achievement. In the same period it destroyed 4,947 enemy aircraft – excluding those shot down by British pilots of the Fleet Air Arm.

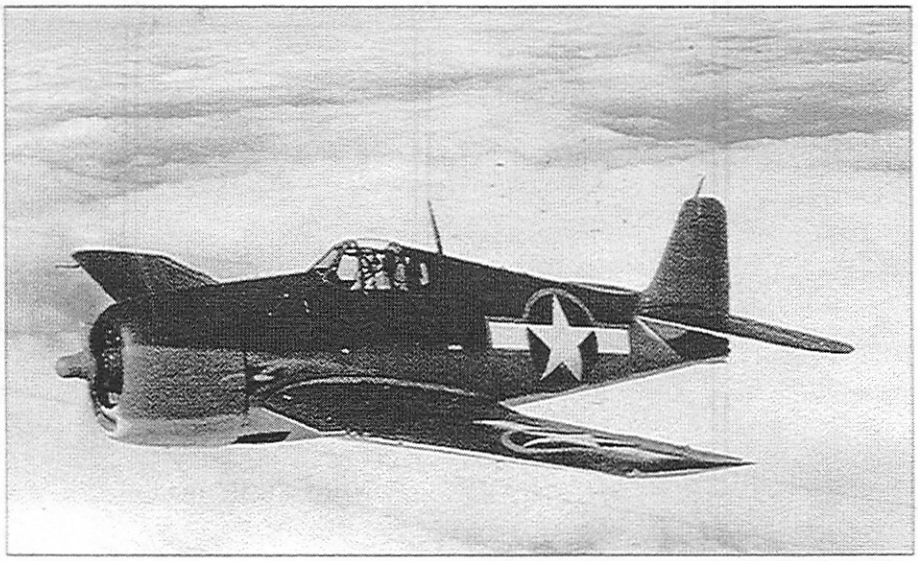


One of America's best wartime shipboard fighters, and second only to the F4U Corsair, the **Grumman F6F Hellcat** was the logical development of the F4F Wildcat. It was first flown as the **XF6F-3** on 26 June 1942, production **F6F-3**s following only five weeks later. Deliveries to VF-9 aboard USS *Essex* started early in 1943, and night-fighter versions comprised the **F6F-3E** and **F6F-3N** with radar in a wing pod. In 1944 the **F6F-5** appeared with provision for 2,000 lb (907 kg) of bombs and with two 20-mm cannon sometimes replacing the inboard wing 0.5-in (12.7-mm) guns. The radar-equipped night-fighter version was the **F6F-5N**. Production totalled 6,435 F6F-5s and 1,189 F6F-5Ns, while 252 F6F-3s and 930 F6F-5s served with the British Fleet Air Arm as the **Hellcat Mk I** and **Mk II**, respectively. Production of all F6Fs amounted to 12,275, and official figures credited the US Navy and Marine Corps aircraft with the destruction of 5,156 enemy aircraft in air combat, about 75 per cent of all the US Navy's air combat victories in the war. The Hellcat's most impressive victory was in that greatest of all carrier battles, the Battle of the Philippine Sea, in which 15 American aircraft-carriers embarked 480 F6F fighters (plus 222 dive-bombers and 199 torpedo-bombers); by the end of a week's fighting Task Force 58 had destroyed more than 400 Japanese aircraft and sunk three carriers. Hellcats were still serving with the US Navy several years after the war.



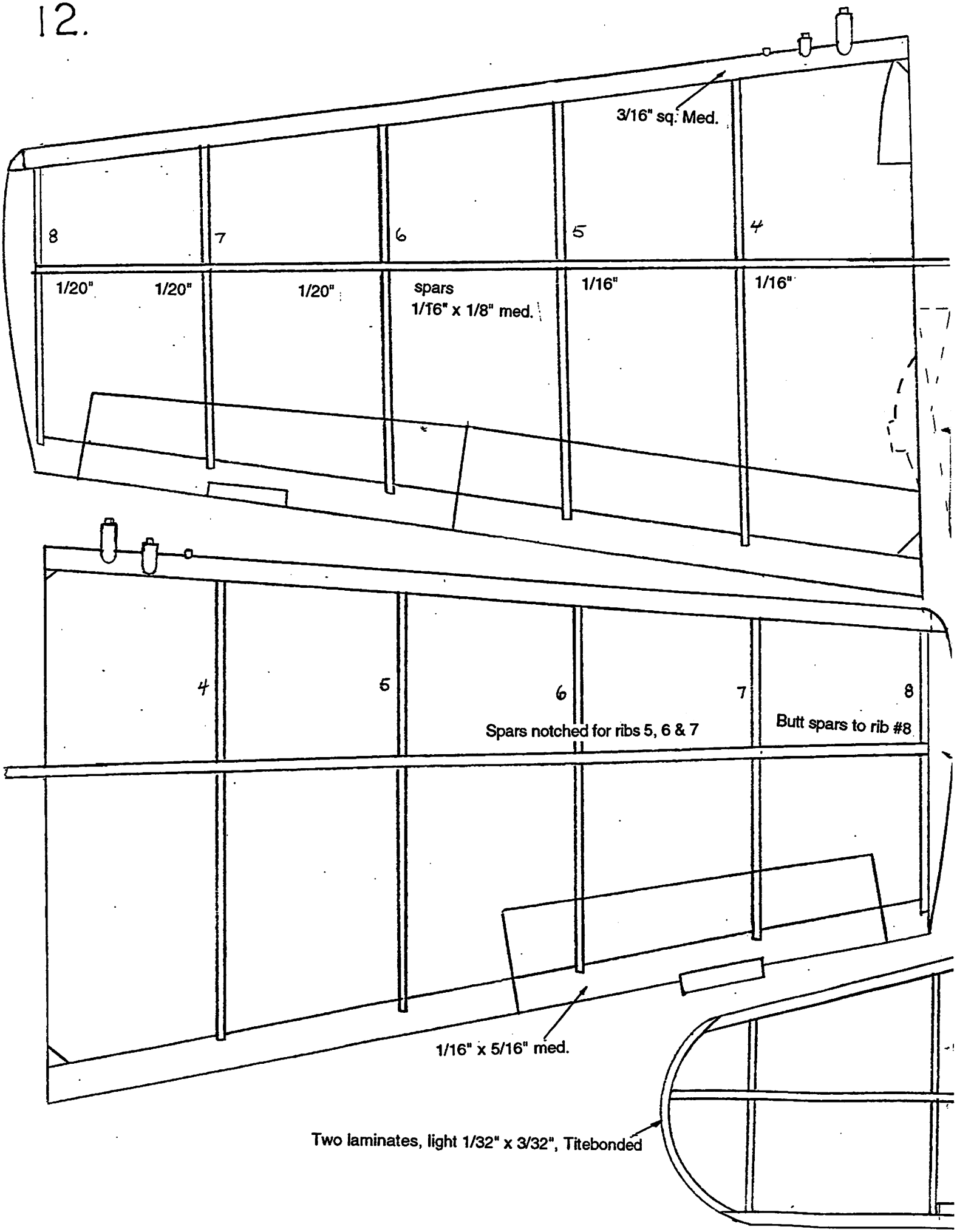
Grumman F6F-3 Hellcat I

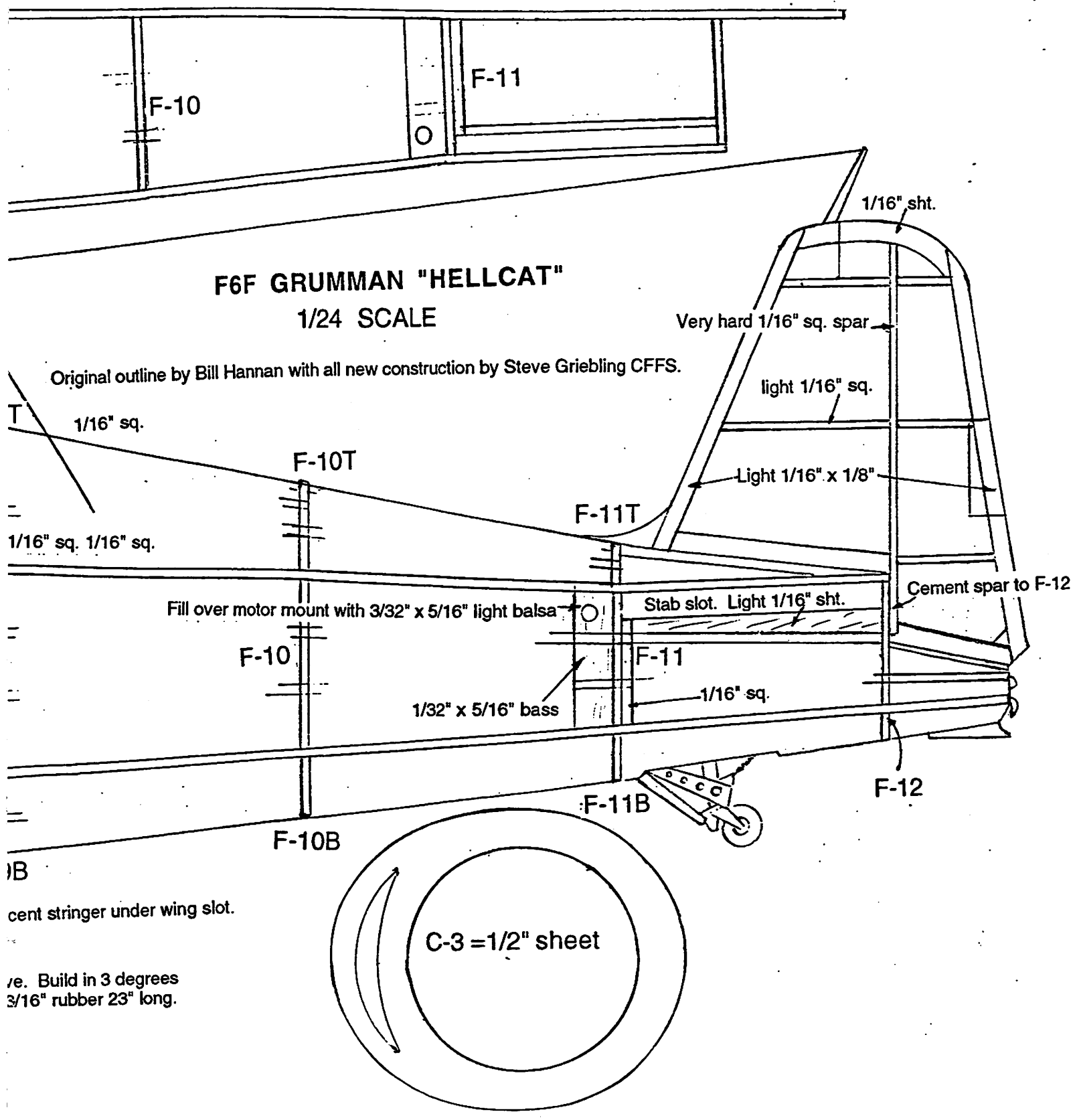
Specification:
Grumman F6F-5 Hellcat
Type: single-seat shipboard fighter
Powerplant: one 2,000-hp (1492-kW) Pratt & Whitney R-2800-10W radial piston
Performance: max speed 380 mph (612 km/h) at 23,400 ft (7130 m); initial climb rate 2,980 ft (908 m) per minute; service ceiling 37,300 ft (11370 m); range 945 miles (1529 km)
Weights: empty 9,238 lb (4190 kg); max take-off 15,413 lb (6991 kg)
Dimensions: span 42 ft 10 in (13.05 m); length 33 ft 7 in (10.23 m); height 13 ft 1 in (3.99 m); wing area 334.0 sq ft (31.03 m²)
Armament: six 0.5-in (12.7-mm) machine-guns in wings, or two 20-mm cannon and four 0.5-in (12.7-mm) guns in wings; two 1,000-lb (454-kg) bombs

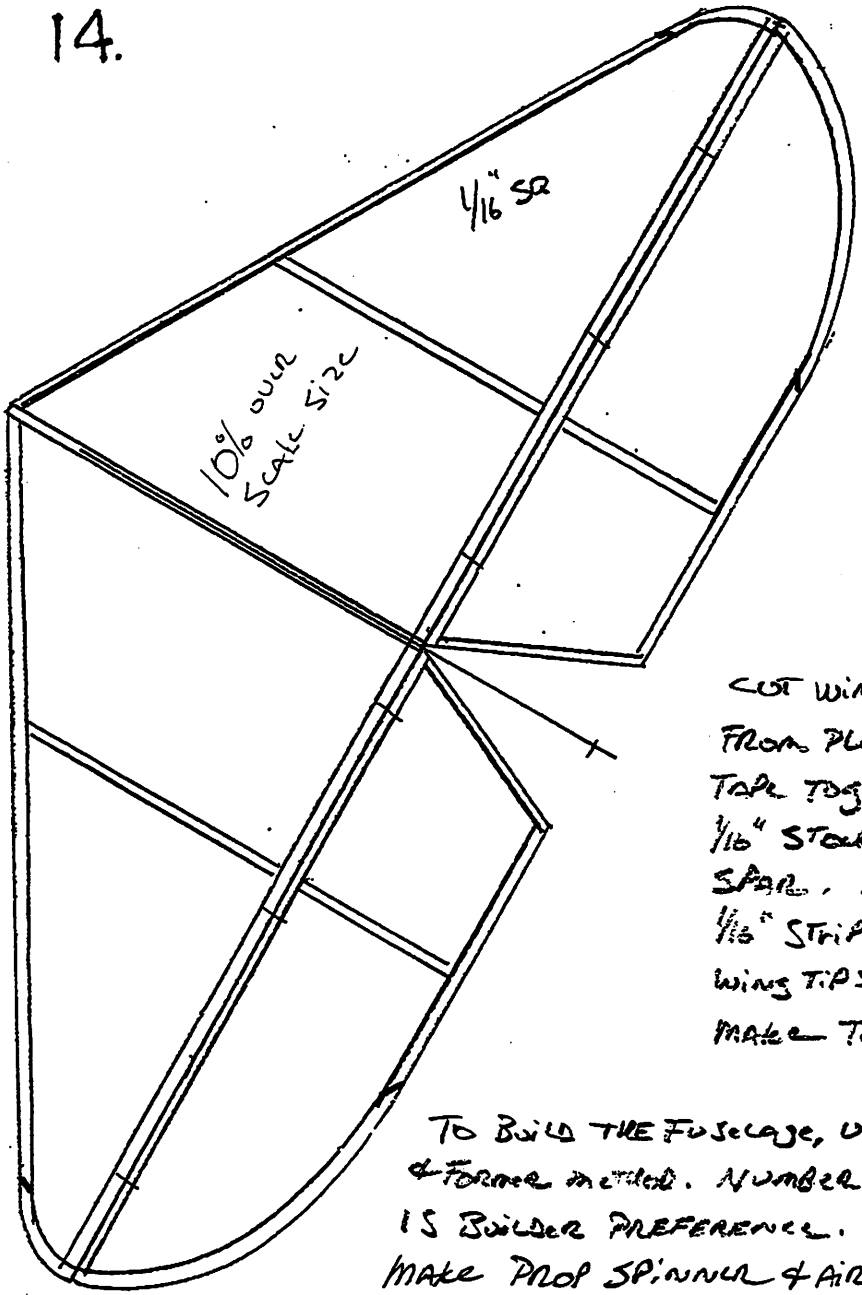


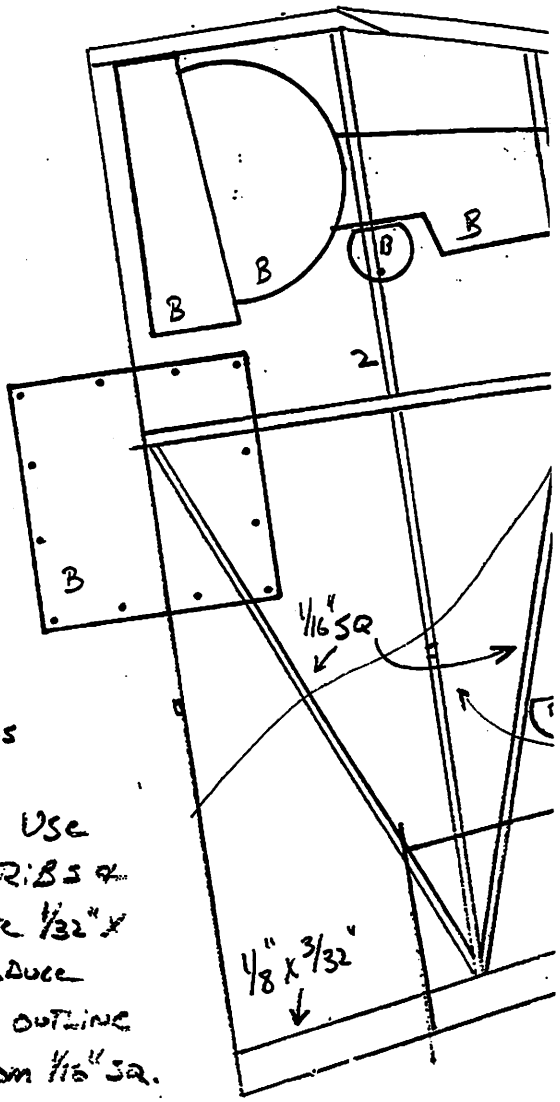
This Grumman F6F-3 wears the red-bordered US Navy markings used between July and September 1943. This was the initial production version of the Hellcat and first saw action with US Navy Squadron VF-5 from the carrier USS* Essex *on 31 August 1943, in the Pacific.

12.


3/16" sq. Med.
8
7
6
5
4
1/20"
1/20"
1/20"
spars
1/16" x 1/8" med.
1/16"
1/16"
4
5
6
7
8
Spars notched for ribs 5, 6 & 7
Butt spars to rib #8
1/16" x 5/16" med.
Two laminates, light 1/32" x 3/32", Titebonded


F-10
F-11
1/16" sht.
F6F GRUMMAN "HELLCAT"
1/24 SCALE
Very hard 1/16" sq. spar
Original outline by Bill Hannan with all new construction by Steve Griebling CFFS.
light 1/16" sq.
T
1/16" sq.
F-10T
Light 1/16" x 1/8"
F-11T
1/16" sq. 1/16" sq.
Cement spar to F-12
Fill over motor mount with 3/32" x 5/16" light balsa
Stab slot. Light 1/16" sht.
F-10
F-11
1/32" x 5/16" bass
1/16" sq.
F-12
F-11B
F-10B
)B
cent stringer under wing slot.
C-3 =1/2" sheet
/e. Build in 3 degrees
3/16" rubber 23" long.



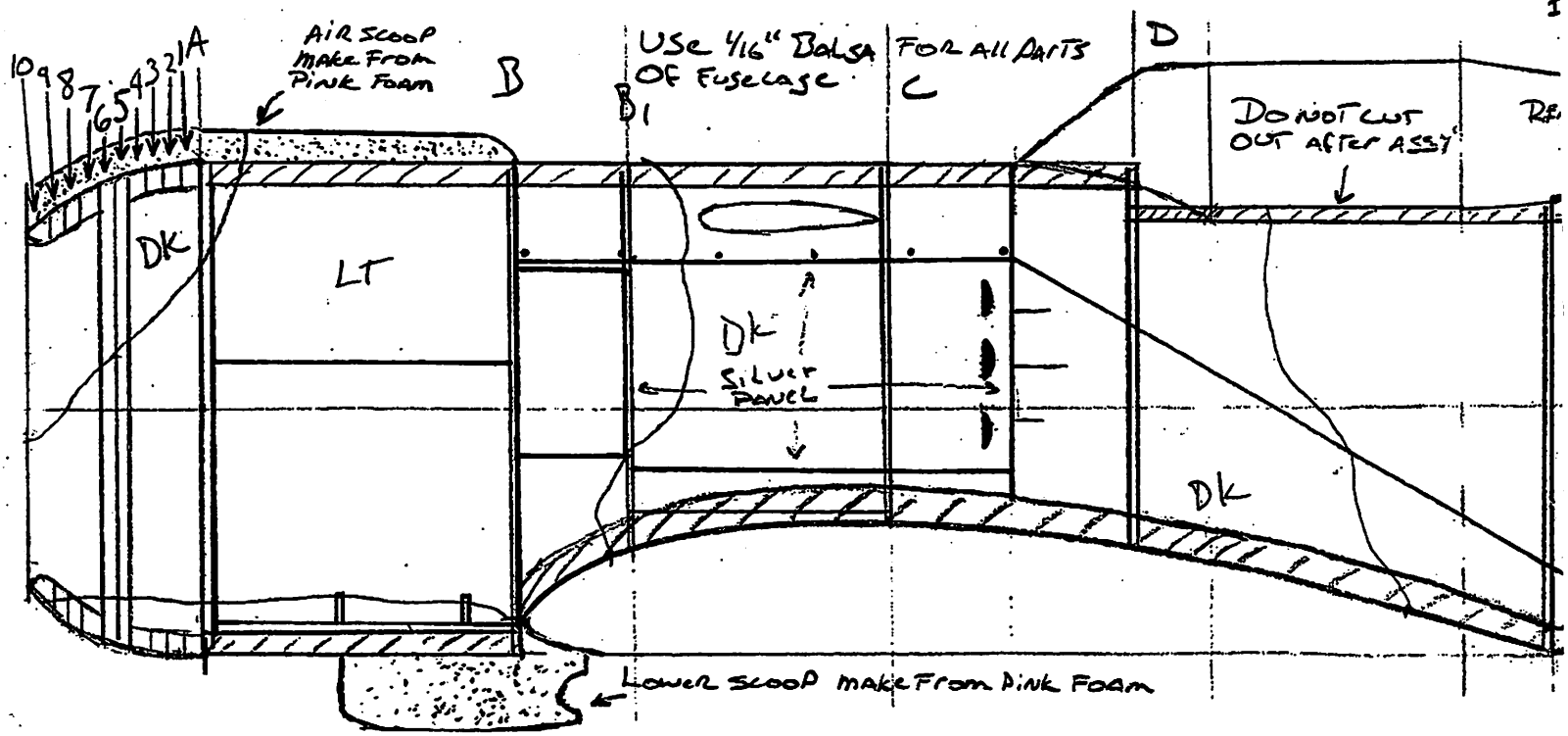


CUT WING HALVES FROM PLAN & TAPE TOGETHER. USE 1/16" STOCK FOR RIBS & SPAR. LAMINATE 1/32" X 1/16" STRIPS TO PRODUCE WING TIPS & TAIL OUTLINE MAKE TAIL FROM 1/16" SQ.

REAR DECK TEMPLATE 1/32"

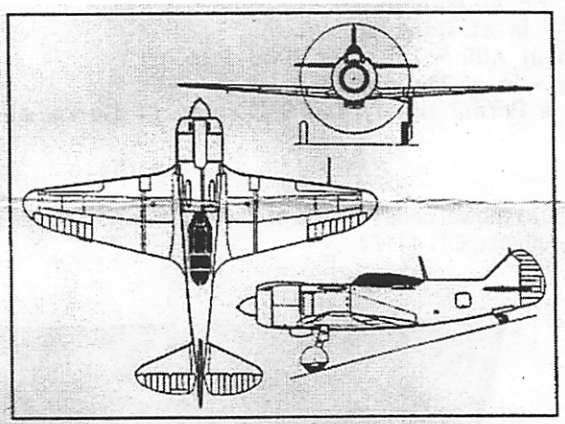
TO BUILD THE FUSELAGE, USE THE KEEL & FORMER METHOD. NUMBER & LOCATION OF STRINGERS IS BUILDER PREFERENCE.

MAKE PROP SPINNER & AIR SCOOPS FROM BLUE/PINK FOAM



For the free-flight modeler, the LA-5 presents many opportunities for a great looking plane with excellent flight performance potential. Some recommended tips are building the wing as shown on the plan. The sliced-rib method over a 1/16" thick spar results in a light but strong wing and when covered, because there are no spars running length-wise to the wing on top of the ribs, the final product has a smooth, uninterrupted appearance. Another recommendation is to make laminated wing tips and tail outlines for strength and light weight – total weight of the prototype in full chalked camo and with all details is 28 grams. Also in the interest of weight reduction, the propeller spinner, the oil cooler housing and the supercharger air intake on top of the cowl should be made from blue or pink house insulating foam. This stuff is easily shaped and can be painted using the cheap acrylic paints found in the craft stores. A 7" gray plastic prop was used along with two braided loops of 1/8" Tan II rubber about 1&½ times the length of the prop to peg distance to give satisfying but not fly-away power.

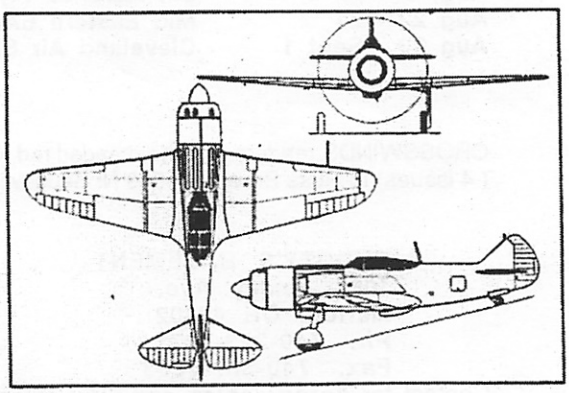
As for color schemes and markings there are many alternatives to suit anybody's preferences. The main ones are of course Soviet but there are also German-captured versions and Czech models. The early LA-5's and LA-5F's were black-green and olive camouflage upper surfaces with lower surfaces painted light blue. LA5-FN's were primarily dark gray and medium gray-green camouflage over the same light blue lower surfaces and the post-war Czech models were olive on the upper surfaces and again, light blue on the bottom. There were also the field-applied winter camouflage schemes which are documented mostly through photos. The standard large ID numbers on the fuselage sides were painted on at the factory in white with a thin red outline and over time, the Soviet insignias changed from a red star outlined in black to a red star outlined with white and another thin outline in red. Other details worth noting about the La-5/7 is that the thin, silver bands found on the cowl were from the paint flaking off the flexible cowl retaining bands and that the upper wings on Soviet aircraft never carried insignia. All this contributes to a very colorful model and combined with the use of a scale profile containing one of the Russian slogans on the side, they are beautiful indeed. For those who are color-challenged, there's even an all-white LA-5F version that was used for the "206" project - the streamlining effort ultimately resulting in the LA-7 model. The inserts show the similarities in the 3-views of the LA-5FN and the LA-7. Also shown is the diamond-shaped "FN" logo found on both the cowl and tip of the vertical stabilizer as painted at the factory on the LA5-FN models.



Definitive La-5FN (above) and early La-5 (below) serving with 159 IAP in Karelia during 1944.



(Below) Three-cannon-armed Yaroslavl-built La-7.



TIP OF THE MONTH

If you need light colored letters or stripes etc. on your model, self adhesive "Trim Strip" is often a good choice. A regular ball point pen can be used to draw directly on the slick plastic film. After you cut thru the plastic with your number 11 blade (don't cut thru the backing paper), remove the pen markings with rubbing alcohol on a "Q" tip, then lift off the cutout letters with your knife blade, carry them on the knife blade to the plane and press them into position. Keeping the letters from wrinkling is not always easy, but it's not much worse than working with tissue.

CFFS CONTEST EVENTS AT LORAIN COMMUNITY COLLEGE ATHLETIC FIELD

1. FAC Peanut Scale, full points.
2. Hi-Wing Cabin Peanut Experimental
3. Hi-Wing Cabin Peanut Production
4. FAC Dime Scale
5. FAC Rubber Scale
6. FAC OH Funk & Waco Ltd. M.L.
7. FAC Jumbo Scale
8. FAC Pioneer Scale
9. FAC Golden Age Civil Aircraft
10. Golden Age Military Aircraft
11. FAC No Cal Profile Scale
12. No Cal WW II 3 flight. total
13. FAC Power Scale Elect. or CO2
14. O.T. Gas Replica Elect or CO2
15. Embryo Endurance (J) (S) (O)
16. Jr. Rubber 3 flight. No Max.
17. H.L. Glider (J) (S) (O) * $1 Pot.
18. 6" Stick catapult glider, $1 Pot.
19. FAC O.T. Rubber 36" Pot
20. FAC O.T. Stick 36" Pot.
21. FAC O.T. Two Bit. 25" Max. $1 Pot.
22. O.T. Jimmie Allen R.O.T. $1 Pot.
23. Modern Civil Scale, 3 flight total
24. Modern Military M.L. @12:00
25. WW I Multiwing Peanut M.L. @12:30
26. WW I Multiwing FAC M.L. @1:00
27. WW II Peanut Combat M.L @ 1:30
28. WW II Combat FAC M.L. @ 2:00
29. Bendix Trophy Race M.L. @ 2:30
30. Goodyear F.1 race M.L. @3:00
31. Greve In-lines Race M.L. @3:30
32. Thompson Radials M.L. @4:00
33. P-20
34. P-30

FAC rules apply with inspection of No Cal & Dime detail. Mass Launch 45 point Min. detail and O.T. Per Plan. Pre select event for multiple option models. No size changes in O.T. 25" Max. Mass Launch and O.T. Gas replica out of bounds to be set at field. All may pick a plan prize.
I-90 Exit 148 to Rte. 301 (S. Abbe Rd.) Check Hoag Rd or upwind..

Cleveland Free Flight Society Outdoor Contest Schedule for 2003:
Sunday July 27 at LCCC 9 AM to 5 PM, C.D. Gordon Roberts 216- 749-4817
Sunday August 10 at LCCC 9AM to 5 PM, C.D. Peter Zbasnik 216 471-7478
Sunday Sept. 14 at LCCC 9 AM to 5 PM, C.D. Russ Brown 216 382- 4821
Sunday Oct. 5 at LCCC 9 AM to 5PM, C.D. Jim Hyka 216 481-6525

Other Events of Interest:

June 27 - 29	**WACO Fly - in at Mt. Vernon, OH Wynkoop field.**
July 4 - 20	**Taylorcraft Fly - in at Alliance - Barber field 2D1.** + FUNK GATHERING
July 18 - 20	**FAC FF "Tweener" at Geneseo, N.Y. (A wedding this year!)**
July 28 - Aug 1	**Outdoor champs for FF at Muncie, IN.**
July 29 - Aug 4	**EAA Air Venture fly - in at Oshkosh, WI.**
Aug, 8 - 10	**5th Aeronca Fly - in at Alliance Barber field 2D1.**
Aug 22 - 24	**Mid Eastern EAA Fly - in at Marion, OH.**
Aug 30 - Sept 1	**Cleveland Air Show & Parma Hobby CFFS Display at Burke Airport**

CROSSWINDS readers with the dreaded red X at issue renewal code No. 105 or lower can send $16 per year (4 issues) to Russ Brown at 4909 N. Sedgewick, Lyndhurst, OH 44124.

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