CROSSWINDS 77

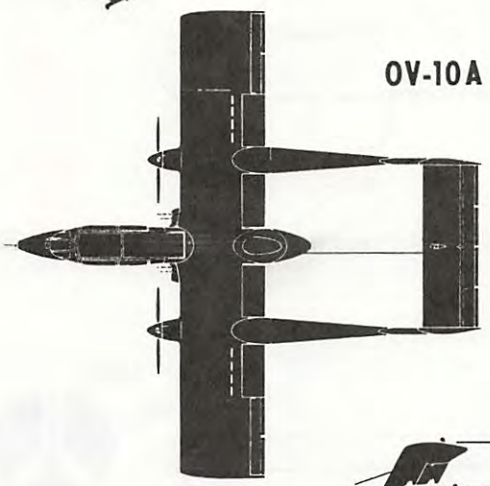


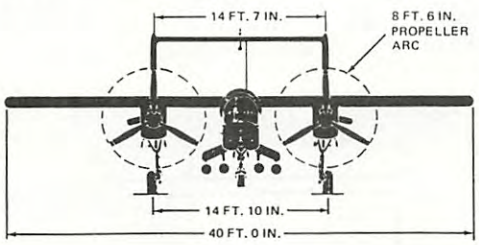
OV-10A "Bronco"

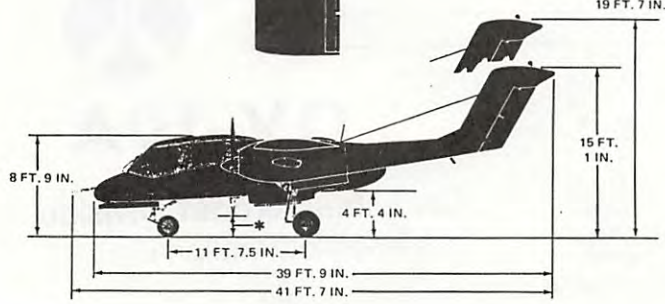
U.S. AIR FORCE
U.S. NAVY
U.S. MARINE CORPS

ARGO-TECH
RM 1930
23555 EUCLID AVENUE · CLEVELAND, OHIO 44117

OV-10A AIRCRAFT







1988 FLYING CALENDAR

Sun. Mar. 6 — CFFS Indoor Flying Meeting 7-10 pm at Seven Hills Rec. Ctr. at Calvin Park. Mapleview Rd. East off Broadview. Scraps, R.O.G., Peanuts. Mike Zand CD.

Thur.Mar 11 — CFFS & CAS set up tables at Randall Mall at 9:30 pm. Bring gloves.

Fri. Mar 10 — CFFS entry starts for Randall Park Mall 37th National Model Plane Show. 5:00 to 9:00 P.M. Free Entry courtesy CAS and CFFS. CFFS Electric R.T.P.
Sat. Mar.12 — as above 10:00 A.M. untill 9:00 P.M. Scale Judging starts at 9:00 P.M.,
Sun. Mar.13 — with Ross Mayo and Lin Reichel supporting CFFS. Sun. 5:00 fold tables.

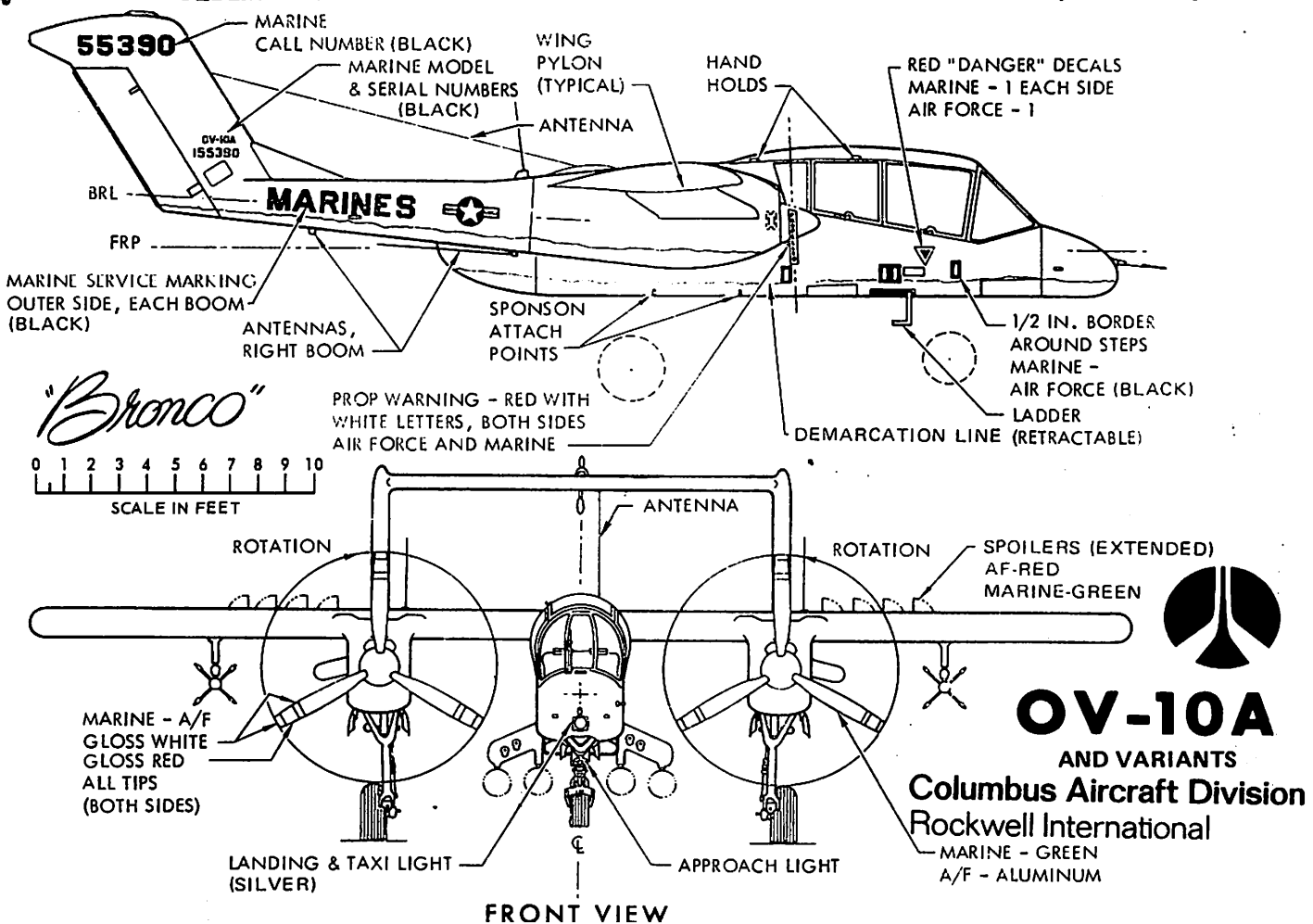
March 15-21 — Sun & Fun Fly-In (EAA) at Lakeland, Fla.

Sun. Mar.20 — CFFS fifth annual Indoor Contest 10:00 to 5:00 p.m. at Estabrook Rec. Ctr. 4125 Fulton Avenue Cleveland, Ohio. See Contest flier page.

Apr. 29-5/1 — Fourth Annual Air Racing History Symposium at Holliday Inn, Brookpark Ohio.
Fri. 4/29p.m. — Saturday talks: Clay Lacy (Reno), Claudia Oakes (NASM, women in air racing),
Informal — P&WA Engines, Formula One Racing by Al Wimer and T.C. "Pappy" Weaver, and
Sat. 8:00 a.m. — after 7-9p.m. Banquet, 50 years of Air Racing, by Steve Wittman .
Sun. 10: -? — Sun. a.m. Slides, Films, Talks, Videotapes.
Society of Air Racing Historians newsletter "Golden Pylons" $10.00 a year. to Jim Butler, Tres. Apt. 518, 36250 Lakeshore Blvd. Eastlake, Ohio 44094. 1988 Symposium Fee $15 members, $20 others (AMA R/C haw-aw-w) $16 Banquet. Advance Registry. $20 at door.

Sun. May 1 — Erie Pa. Annual Indoor Contest at Edinboro St. College. See F.A.C. Club News.

July 8-10 — FLYING ACES CLUB Nationals at Geneseo Warbirds Museum Field, Geneseo, N.Y.





OV-10A "Bronco"	
MULTIMISSION AIRPLANE	
SCALE: NOTED	DATE: 5/73
PREPARED BY Columbus Aircraft Division Rockwell International	

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CROSSWINDS

THE JOURNAL OF THE CLEVELAND FREE FLIGHT SOCIETY

NO. 77 Summer 1987 ← 2/88

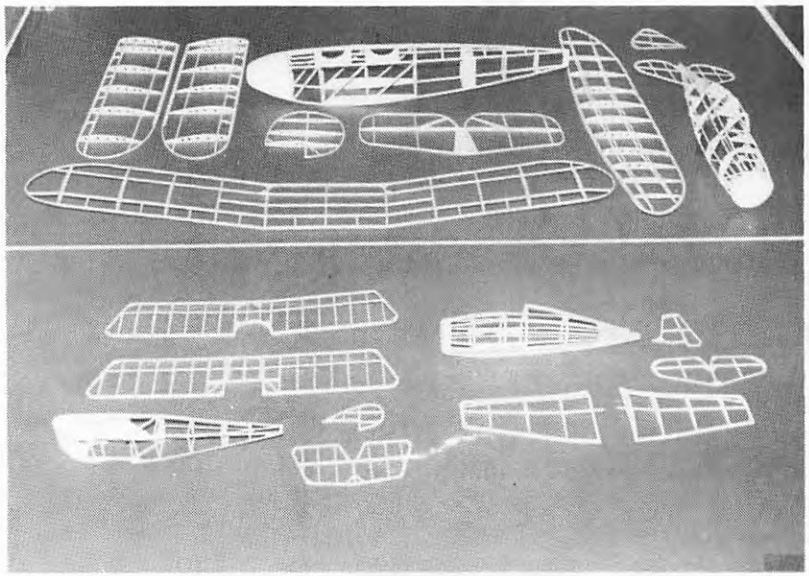
EDITORIAL COMMENT

Thanks to all of you who acknowledged my recent editorial efforts with Crosswinds #76. In this issue, a joint effort of Russ and myself, we are setting the tone for issue #78, a 'multi-mania' special, edited by Dennis Norman. In anticipation of that effort I sketched out a simple no-cal OV-10A Bronco to serve as a prelude to a twin or multi project.

Now that the outdoor flying season is recent history and before memories diminish, let me attempt to recapture some of the more noteworthy moments of this summer's contest activity.

The first summer meet at Erie on May 25th, saw Gordon Roberts' tried, true and faithful Chambermaid disappear into oblivion, as the so-so Suzy proved that mediocrity can occasionaly prevail. The Suzy stayed in sight, and was able to answer the final bell in the Greve Race. Also, at this contest, many new models appeared, including my as yet frustrating, Vari-Viggen (see picture page). So far there seems to be no way to adjust it to fly for any duration, although low power test flights have looked promising.

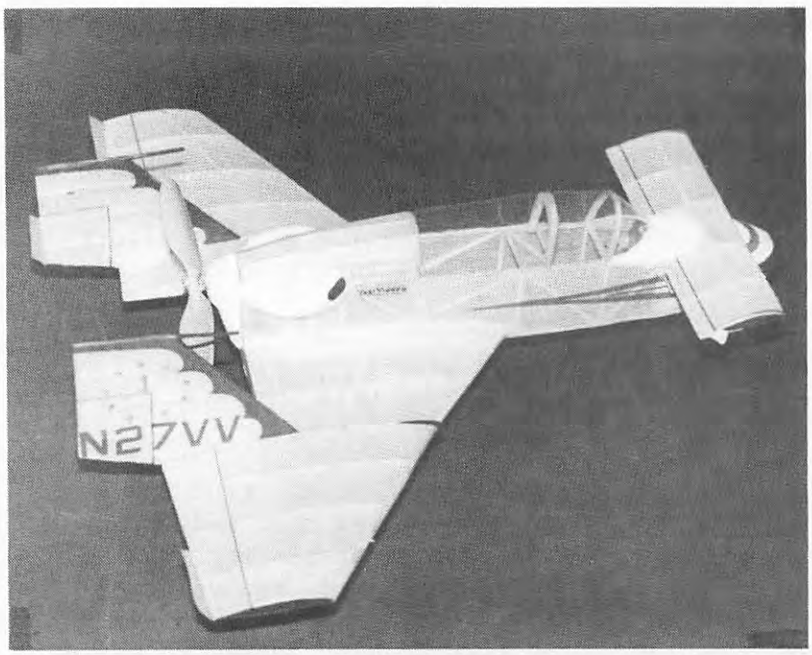
CFFS had its first contest on Father's Day, June 21st, at Lorain County Community College. We were lucky to complete all the events as the weather was threatening all day. Precision Power Scale was won by Jim McMahon, flying an Astro Electric powered 1919 Hild Manshonet. This was the first time Jim had attended a CFFS meet, having recently moved to Cincinatti from California. Another new kanone winner was Mark Braunlich in W.W.I Peanut Combat with his DH.5.



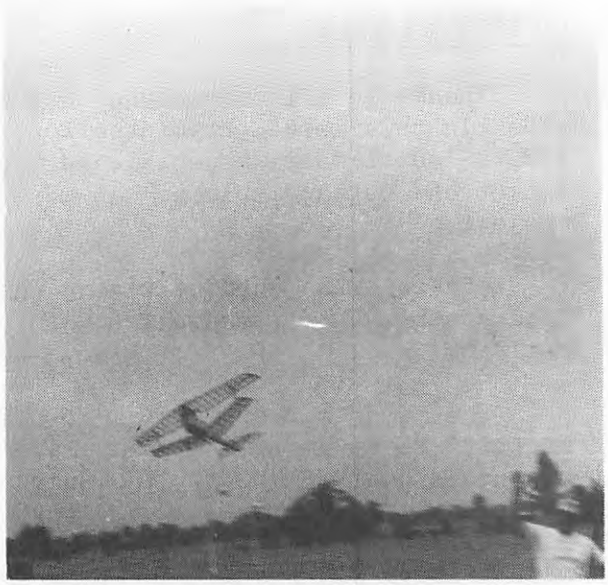
"Dem bones, dem bones"
Jumbo Udet, G.A. Rep. Seversky,
Peanut Martinsyde, Peanut Hellcat.



Dennis Norman launches his
Lancaster on its winning flight.



Mike Zand's Vari-Viggen
Photogenic--yes, Flyable--No!



Jim McMahon and his
Astro-powered Hild Manshonet.

The July CFFS contest started out with near perfect weather, but it became quite turbulent in the afternoon. This was a lucky break for me since I had to leave the contest at noon to play in a summer band concert. Before departing I managed to complete enough flights to win Peanut, Walnut , 10-Cent Kit and H.L.G. Many thanks to Allan Hewston, who assisted me with all my flights in such a short time span.

At the August 9th contest Jim Hyka won the GHQ Peanut event and was awarded a Brown A-23 CO-2 engine for his efforts. Afterwards, Del and Klara Balunek hosted a yard party and dinner at their home. Once again we were lucky to complete the contest as rain delayed flying until 1:00 p.m. Since there were several out of town contestants, every effort was made to complete this contest. The inclement weather held off until just after the dinner. Unfortunately this terminated Gordon Roberts' Andreason which was resting on the roof of the college.

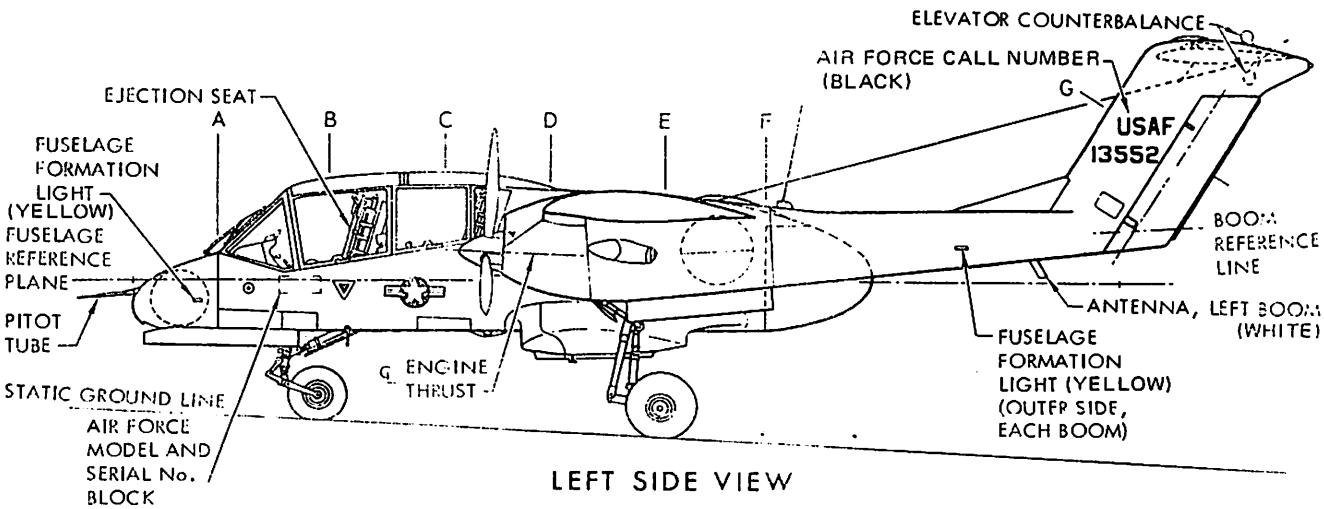
It was off to Erie again on August 16th for the annual Picnic Contest. The weather was extremely hot and several planes were lost, including my reliable 10-cent Comet Taylorcraft. It was found by a local farmer, as he was mowing hay and returned to me a month later with only minor damage. Near the end of the contest Dennis Norman successfully flew his famous Lancaster. The beautiful, realistic 39 second flight earned Dennis a much deserved kanone in Jumbo Scale.

On September 13, CFFS was rewarded with a near perfect flying day. This contest attracted a host of spectators and they were treated with some spirited competition. Ross Mayo won W.W.I and Gordon Roberts won W.W.II while my Stormovik met its untimely demise as it smashed into an unsuspecting observer. Amidst all of this activity, Jim Miller of Cincinatti few a 14 Bis and won FAC Scale.

On the picture page, the first photo shows the result of a slow but steady approach to model building. This summer I completed four sets of bones, mostly by working in the early morning hours. Now with school in session, the trick is to find time to complete at least two of the projects for next summer's FAC Nationals.

In closing I'd like to mention that I hope to direct the CFFS Annual Indoor Contest in late February or late March. As usual, this date will be decided when this availability of a site is determined. In the meantime have a good building season this winter and drop me a line if you find the time.

Michael C. Zand
Sec. Treasurer CFFS



LEFT SIDE VIEW



Del Balunek assists Dennis Norman ready his P6E.



Lad Plachy at Lorain, September 13, 1987



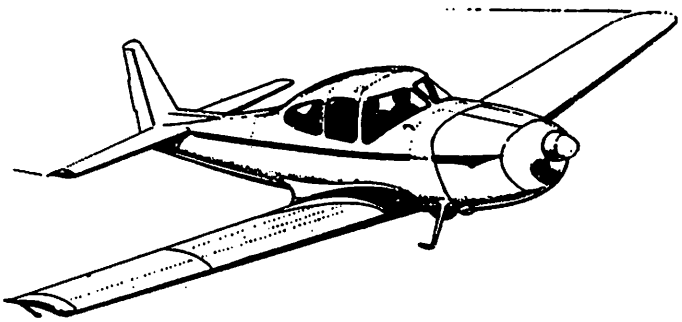
Del readies his Waco, assisted by Alan Hewston.



The Micro-X Crew: Rick Bulea (The Plane Dealer) Jerry Skrjanc, Bobby Skrjanc, Marge Koschutnik (holding her first model--A Micro-X Hornet).

CROSSWINDS
THE JOURNAL OF THE CLEVELAND FREE FLIGHT SOCIETY

No. 77



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Please check your address label for issue expiration numbers below 77 as your reminder for $10 contributions to CROSSWINDS. Thanks!

FLAT HATIN' ON NORTH AMERICAN PLANES

Flash! Bad Guy Squadron bombed at The National Warbirds Museum at Geneseo, N.Y. The Skull Squadron was driven off with only superficial damage. FAC NAT'S CD and MAX-FAX Editor Allan Schanzle dropped a boot with news that The FAC NAT'S is on for July 8-10, 1988 at The National Warbird Museum Field. Details will follow in FLYING ACES CLUB NEWS, MAX FAX, and here. MAX-FAX is $10 in U.S.A., Canada, or Mexico, and $11 to other countries from Allan Schanzle at 20008 Spur Hill Dr., Gaithersburg MD 20879. Phone (301) 840-5884. Scale judging starts Friday evening and continues at the field for late arrivals like Dennis Norman (Haw-aw-aw-w-w-w.) Mass Launch events will be flown by top ten "Shell Dash" qualifier timed flights with 40 scale point minimum FAC judge approved models. No skinney dawgs with the fat cats! This change will streamline the Mass Launch events, but add to the need for timers for probably two timed flights and the time keepers recording task.

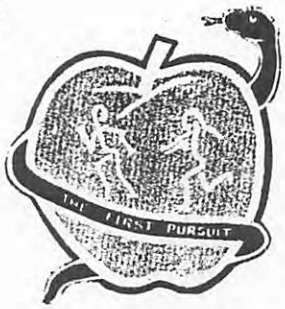
CFFS opens 1988 with Chuck Slusarczyk elected to the "Pole Position" for indoor action. CFFS President elect Chuck amused all who followed him through four tours of the food line at the annual banquet, with reflections of adventures with early powered Ultra-Light flying. Chuck flew the camouflaged biplane with Polish Royal insignia at air shows and flew oh-so long over water endurance straining flights. The new CGS Hawk UL has a really big relief tube to mount the tail on! Chucks' next act will be to form a food circle February 7 at the CFFS meeting at Dennis Normans' house at 11216 Lake Ave, at 7:30 p.m. Pity to report that Chucks' foreward CG stability will dry away with the 1988 New Years resolution diet.

First in the air in 1988 will be advisors with Ralph Turner and the Lakewood Rangers (Jrs.) every Wednesday 7-9 pm at Harding Jr. High at 16601 Hilliard, Lakewood, OH. Flying trials in the auditorium will continue through March. Call Ralph Turner at 1-937-6884.

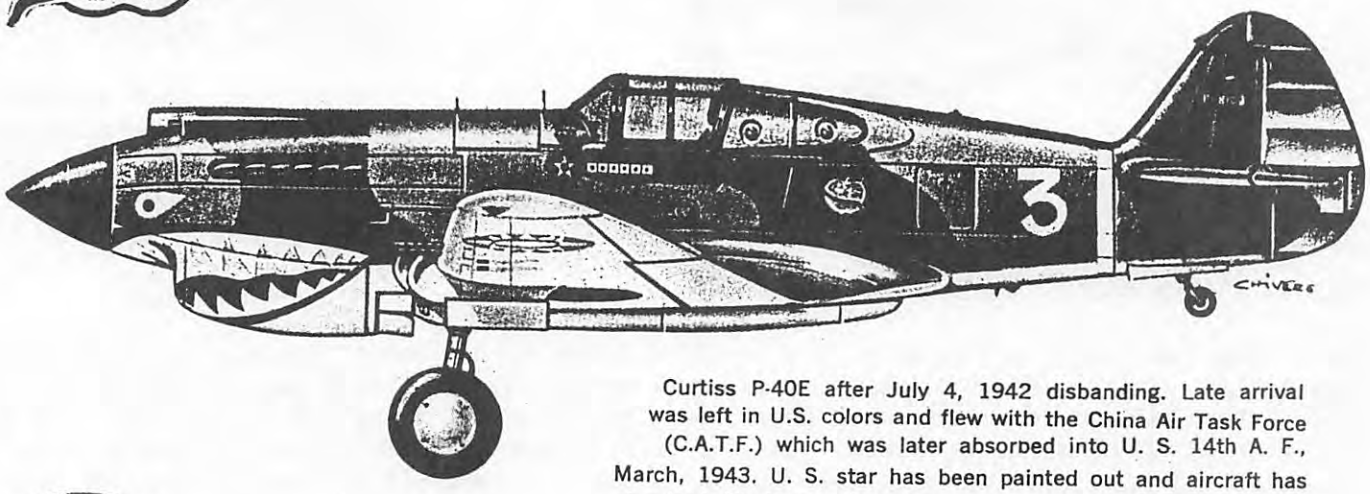
A CFFS meeting on March 6 is pending approval for use of Seven Hills Recreation Center at the end of Mapleview off Seven Hills Blvd. call Mike Zand at 524-3480.

The next Cleveland and area activity is the National Model show at Randall Mall March 11-13. Bring your Models and join in the get-to-gether. CFFS will fly electric R.T.P. "Polish" CL. Check in at Dennis Normans' Feb 7 for choice time slots at the free flight display table. Dennis may show videos of multi motor rubber scale models flying. Call Dennis at 631-7887. CROSSWINDS 78 will feature Dennis Norman as Editor on multi engine rubber scale flying. The North American OV-10A Bronco this issue is a warm-up for the next issue. Look for it!

Indoor Contest action continues March 20, 1988 at Estabrook Recreation Center. See flier. Pistachio Scale FAC for 8 inch max. wingspan rubber scale is an added event. Dennis Norman has a whole bag full of Peanuts reduced to Pistachios. Ask Del Balunek if he has a Craude? Sign up for a table tour at the Randall Mall Show, and select the Pistachio plan of your choice Feb 7 at the CFFS meeting. Then fly it March 20 at the CFFS contest. Not too salty! Del Balunek has a Nieuport 17 and a Fok D VII Pistachio pair flying. If he sells a SAAB, he may have enough money to buy an AMA lisence and fly competition in '88? ($40, $18.50 SR, $16 JR, or $21 over age 65).

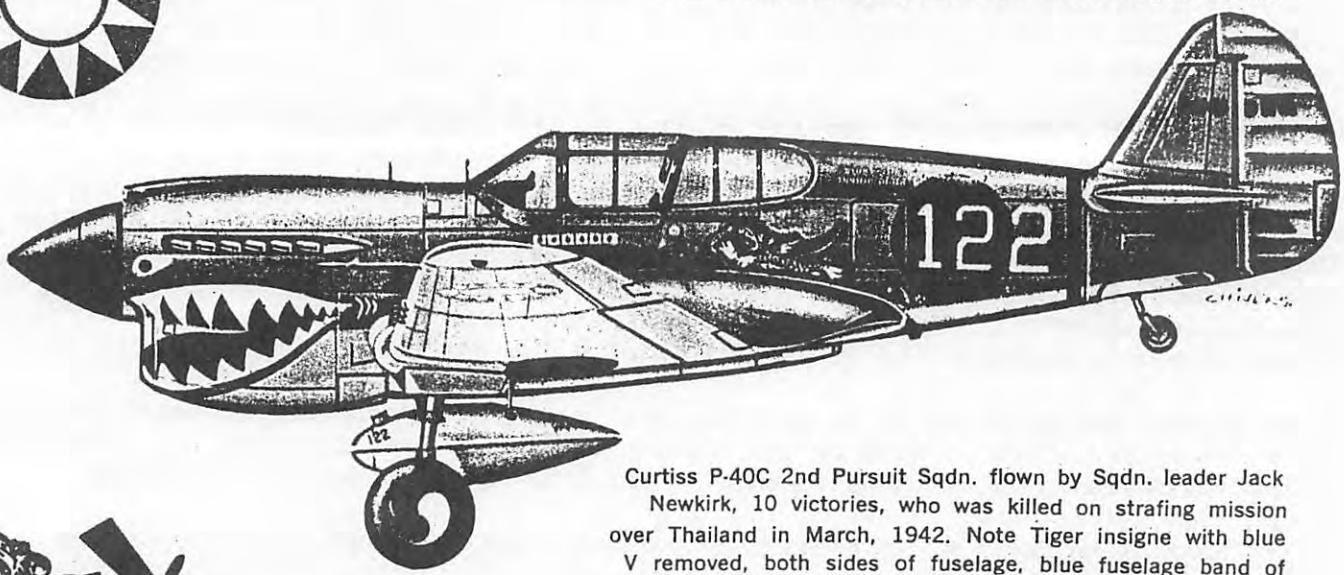


Curtiss P-40C flown by Dick Rossi of 1st Pursuit Sqdn. Rangoon, 1942. Adam and Eve insigne was positioned on both sides. Six kill markers and an early U. S. insigne appear on right side, twelve point Chinese star is on left. Aircraft number on tail is P-8103 with white fuselage band of 1st Pursuit.



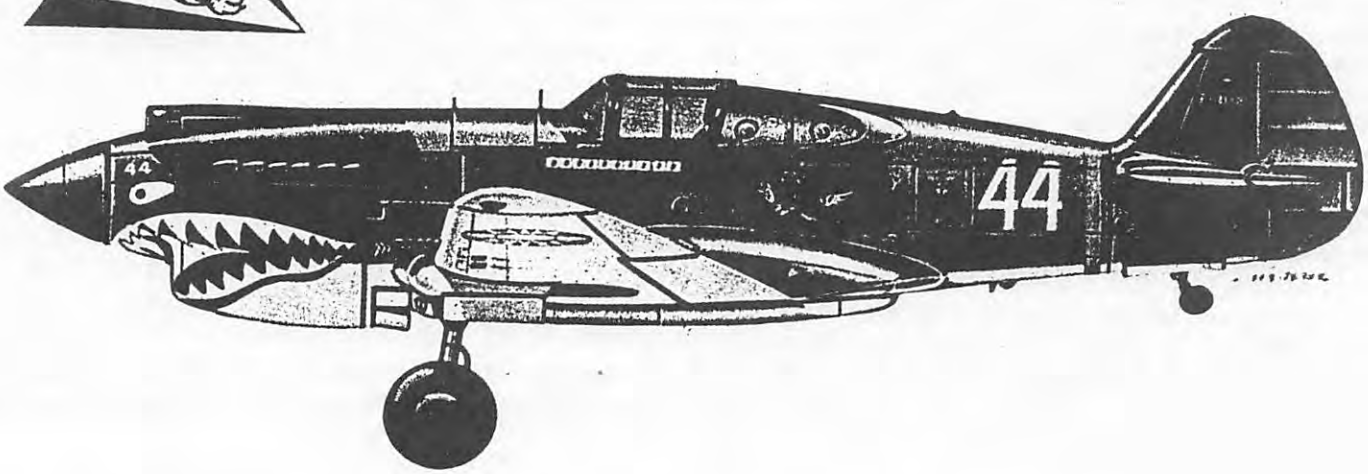
Curtiss P-40E after July 4, 1942 disbanding. Late arrival was left in U.S. colors and flew with the China Air Task Force (C.A.T.F.) which was later absorbed into U. S. 14th A. F., March, 1943. U. S. star has been painted out and aircraft has standard Air Corps olive drab over gray; some aircraft showed hand applied dark green over o.d. and all were given three digit numbers after July 4. Earlier P-40Es had same top camouflage as Cs but with dark gray undersides instead of yellow sand.

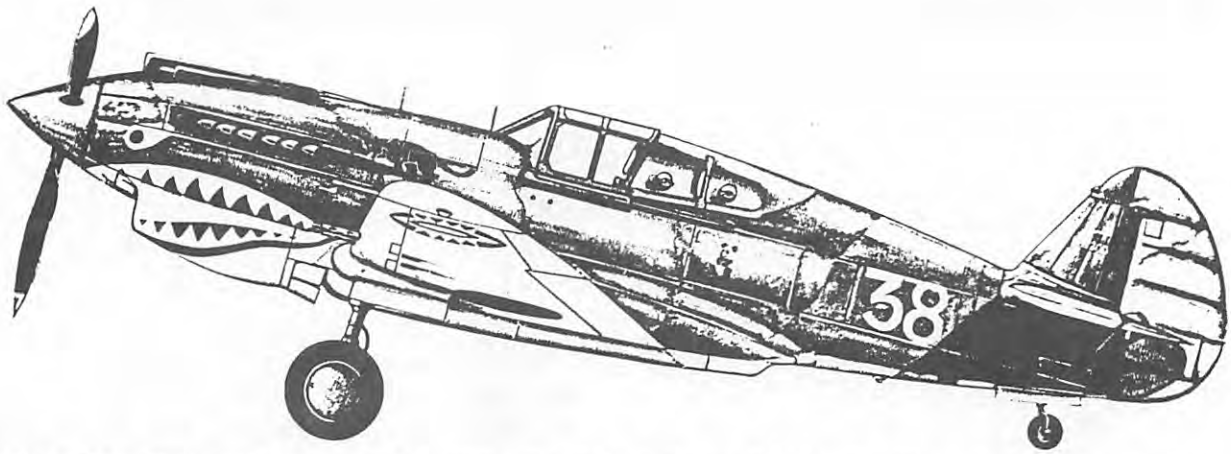




Curtiss P-40C 2nd Pursuit Sqdn. flown by Sqdn. leader Jack Newkirk, 10 victories, who was killed on strafing mission over Thailand in March, 1942. Note Tiger insigne with blue V removed, both sides of fuselage, blue fuselage band of 2nd Pursuit (Panda Bears).



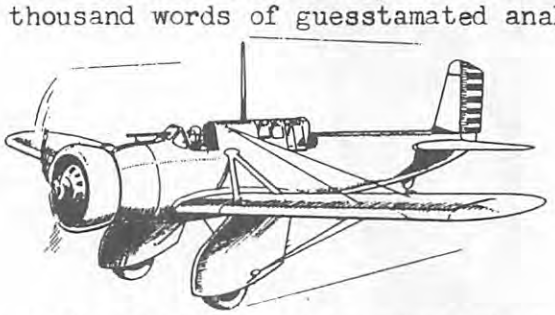




Another December 7th flew by; with this one, we had a Dave Diels Curtiss P-40 kit to add nostalgia to the date. Ah how those tiger teeth inspired model building in the 1940's. My solid balsa Curtiss P-40 flew lots higher and longer than my built-up Capitol P-40! I suspect the string in the 3rd floor bedroom ceiling gave the solid P-40 a big lift. But what did many of us know about trimming free flight models then?

During WW II, the Curtiss P-40B, C, and E were used efectively by the Flying Tiger AVG in the Burma sector. Now Dave Diels adds the joy of tiger teeth to our WW II combat event use options for Peanut WW II Combat. The Curtiss P-40B/C kit is $8.95 plus $1.50 shipping from Diels Engineering at P.O. Box 101, Woodville, OH 43469 USA. Construction of the fuselage is keel half side method, with formers printed on good 1/20th sheet balsa. The wing airfoil offers the ideal sharp nose, flat bottem section with a 45 degree set 1/16 square leading edge, if you go ultra easy with the sand paper. The top spar is also good, at 33% chord. Maybe Dave has been flying, and catching on? The thin airfoil and long nose arm of the P-40 give promise for duration, if you add lightness. Green top tissue and white (for light grey) bottom tissue are in the kit. Dave added the usual exceptional scale doccumentation pack with Flying Tiger Hell's Angel or U.S. ARMY decals. ALL over silver is another color choice.

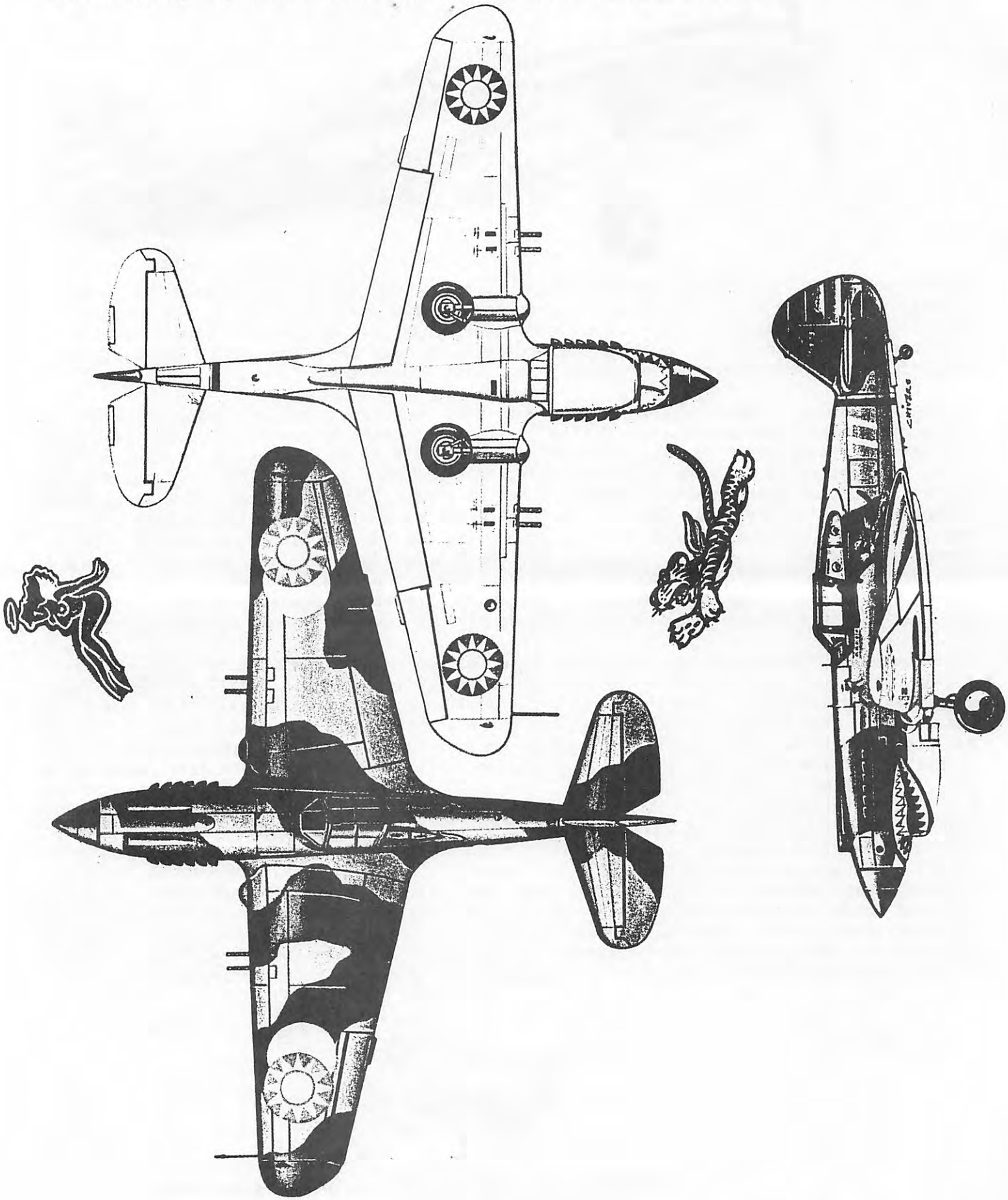
Still building Curtiss in the crate line, Dave follows P-40 kits with a real big single engine subject(s). The Curtiss A8 or A12 Shrike in 1/2 inch/ft. scale will be over 21 inch wing span, by slide rule accuracy (remember the slide rule and how to slip it?). The Shrike was a 1930's P-shooter era attack type somewhat resembling a stretched out Ryan ST. The A8 was powered with an inline Curtiss conquerer engine. Only about a squadron quantity were bought due to low funds, and low power. A larger Curtiss radial cyclone engine powered the A12. The combination A8/A12 kit is $15.50 plus $2.00 shipping. For additional kits, deduct $ .50 from the shipping per kit. See Squadrod/Signal book AIR FORCE COLORS VOL. I 1926-1942 page 23,44, 58, and 60. More stuff on P-40's there too. The A8 Shrikes were painted olive with orange-yellow wing and tail surfaces. The A12 Shrikes had true blue fuselages after the 1934 uniform painting policy change. A 3-view A8 Shrike by B. F. Hardesty in the U.S. magazine Scale Modeler V3, #1, May 1965 shows the white and blue 13th Aero Squadron marking. The bold white cowl and wheel pants trim plus white skeleton grim reaper on dark blue patch fuselage badge look as great as the Owl trim painted Curtiss Hawks. The original 3-view may have been in color, because the background is too dark to copy well for republishing here. A look in the kit box will be worth a thousand words of guesstamated analysis. Go for it!



1934

CURTISS A-12 "SHRIKE" 750-h.p. Wright Cyclone radial. 210 m.p.h. U.S. attack plane.

10 Curtiss P-40C flown by R. T. Smith, 3rd Pursuit (Hell's Angels) 8 victories. Smith scored five kills in this aircraft: three Sallys and two Nates, over Rangoon, Burma December 23, 1941. Note old position of R.A.F. roundel below angel insigne (left side only) tiger insigne both sides, aircraft No. P-8173. Propeller was flat black with yellow tips.





NAVION TRAILS

Ken Hamilton, Flying Flea model designer, and engineer at North American Aviation adds Navion nostalgia and data to the Navion theme. Ken enjoyed flying in Navions used by NAA to fly B 45 project engineering support to Edwards AFB, and on to Muroc Dry Lake, and to Long Beacb, CA airport production facilities from NAA engineering at LAX. Ken's letter describing feather smooth landings by pilot George "Moutain Bear" Lane, and adventure with the late, great test pilot George "Wheaties" Welch follows:

First I must tell you I never worked at the engineering of the Navion. That project was small, a select group off to one side conducting the design and FAA Type Certification almost unknown to the rest of the Engineering Department. A vastly more demanding project was concurrently underway, the B-45 series Tornado four jet bomber. I had the propulsion systems design group for the XB-45, then continued on through the B-45A, B-45C and RB-45C production airplanes, seeing that program through to the end. It kept me amply busy, and was directly responsible for my enjoyable exposure to the Navion as a passenger in company owned and operated examples of the type. I made numerous trips to the Edwards AFB North Base while we had the XB-45 flight test program underway there, followed by many trips from the Los Angeles Division on LAX where we had the engineering department to the production facility on the Long Beach Airport.

I rode in the right front seat, and while not a pilot, watched and "flew" right along with the pilot, enjoying every minute of every flight. I will relate several instances that highlighted this relationship with the Navion.

Approaching the EAFB North Base once, my pilot called the tower requesting landing instructions. The response came back through the rather poor loud speaker of the time, to me a series of nothing more than "arkety ark ark!" The pilot acknowledged, we continued our approach and landed. While still on final, I remarked that I didn't see how he understood that thing, I couldn't, it must be an art that came with experience. The pilot remarked he had not understood either; he just called in, the radio said, "Arkety ark ark", he answered, "Roger" and landed. Of course the unintelligible reply had once been instructions to go around due to traffic, he had replied, "ROger," landed, and gained a good chewing! The radio was improved later. (Bear in mind air traffic was vastly lighter in those days of over 35 years ago.)

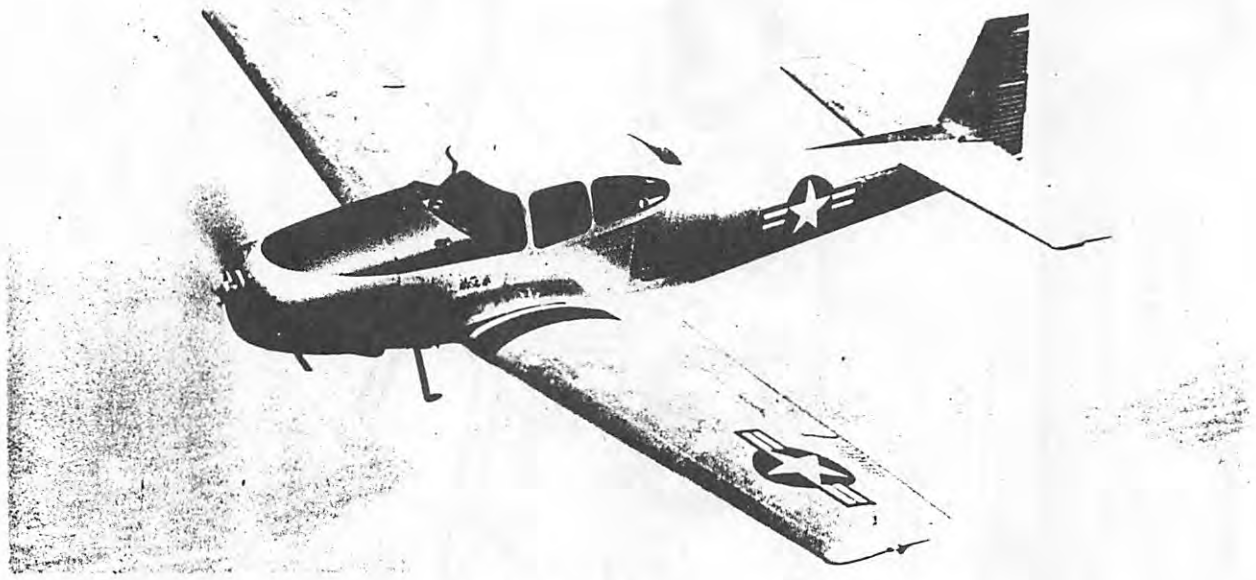
Returning in late afternoon from Long Beach one time, a company pilot, George (Mountain Bear) Lane was my pilot. George was part Indian, hence the name. George loved his assigned Navion, kept her in Concours condition, and woe to any passenger who did not treat her with respect. We had two young men, stockchasers, in the rear seat that flight, keeping a continual chatter going. George and I were silent. On final, one young man began to tell his buddy of the sharp landing another pilot had made with his Navion. They had touched down right at the beginning of the runway, coming over the fence low. The pilot had hit the brakes hard, had swung off the runway in a 90° left turn on the very first taxiway, directly into the NAA ramp area. All the time the young man was relating this "sharp" landing, George was drifting easily in over the fence, gear and flaps down, engine idling. We touched down on main gear only, very lightly, the nose gear eventually settled as speed decayed. Finally, turning off on to a taxiway headed to southeast back toward the NAA ramp, no brakes needed, engine idle speed keeping us rolling comfortable, George ventured, "Well, the way I see it, we pay rent on the whole airport!" That silenced the back seat!

In what was no doubt the most unusual flight in a Navion for me, I was privileged to have George "Wheaties" Welch as my pilot. (George was later killed during a high speed test flight of a YF-100 fighter.) We were at the EAFB North Base. An XB-45 four jet bomber had taken off with an AEROJET liquid fuel rocket mounted under each nacelle and was to drop these on the lakebed far to the south to test the parachute and the ability of the rocket to withstand landing for reuse. Numbers of Air Force personnel prepared to drive to near the drop site, Wheaties requested permission for several NAA personnel to also drive there. Permission was denied. Wheaties turned and said, "If you want to watch that drop, hurry up!", ran for the parked Navion. I sat in the left rear seat this time, the B-45 Flight Test Project Engineer in the right front. We flew down the lake, at the expected drop site lowered the gear and flaps, throttled back and, headed into the wind, for all practical purposes, had a stationary grandstand seat. The XB-45 approached south of us from the west, dropped the rocket as it passed on our altitude. The chute opened and as the rocket drifted eastward to a landing, Wheaties raised the gear, the flaps, and we spiraled closely around the rocket chute, landing almost beside it. We walked over and had completed our inspection before the cars with Air Force personnel arrived! Incidently, the rocket package stood the drop nicely, soft cushions under it absorbing the impact.

(Bear in mind that this was at Muroc Dry Lake...the lakebed I mention was hard and smooth.)

The Earl Stahl designed Navion model is a beauty. The three view on page 14 looks very good except for the airfoils, shown as being all convex from root to tip, varying in thickness. Actually, the root airfoil was convex, fairing smoothly from that to a strongly undercambered tip airfoil. This yielded the excellent low speed stall and control characteristics described on page 25. Unfortunately, it also exacted a speed penalty. This was realized during design, and the decision was made to favor slow speed control and forgiving stall in anticipation of Mr. Average Man piloting the airplane.

The 3 view on page 14 indicates the basic three stripe paint scheme for new Navions for civil use. Private owners of course can paint the airplane as they wish, so modellers can create their own color scheme, or seek a particular prototype that appeals.



The L-17 liaison aircraft.

I do not see mention of the military version of the Navion, however. The U. S. Army bought 83 L-17A Navions from NAA stock. Later, the Ryan Aeronautical Co. sold 163 L-17B Navions. 35 of the L-17A Navions later received improved brakes and fuel tanks, being re-designated as L-17Cs. Finally, the airplanes were designated as U-18A, U-18B, U-18C, and were transferred to the USAF for use in AF aero clubs. The information in this paragraph is from Gordon Swanborough's book, "North American-An Aircraft Album", page 80. The excellent history or roster of all NAA types was published in 1973 by Ian Allen in Britain. My copy was sent to me by Ron Moulton before I knew of the book. Later the NAA Management Club made copies available to members (for a price). Page 80 carries two phtos, a civil version with a single stripe containing the script word "NAVION" on the engine cowling, and a U. S. Army L-17A with star and bars, serial no. on fin, large black letters on fuselage side. The "LJ-302" on the aft fuselage sides appears to be on the lower wing surface also. Except for the stars and bars, lettering, the airplane appears to be all aluminum colored. There is the usual anti-glare panel forward of the windshield too.

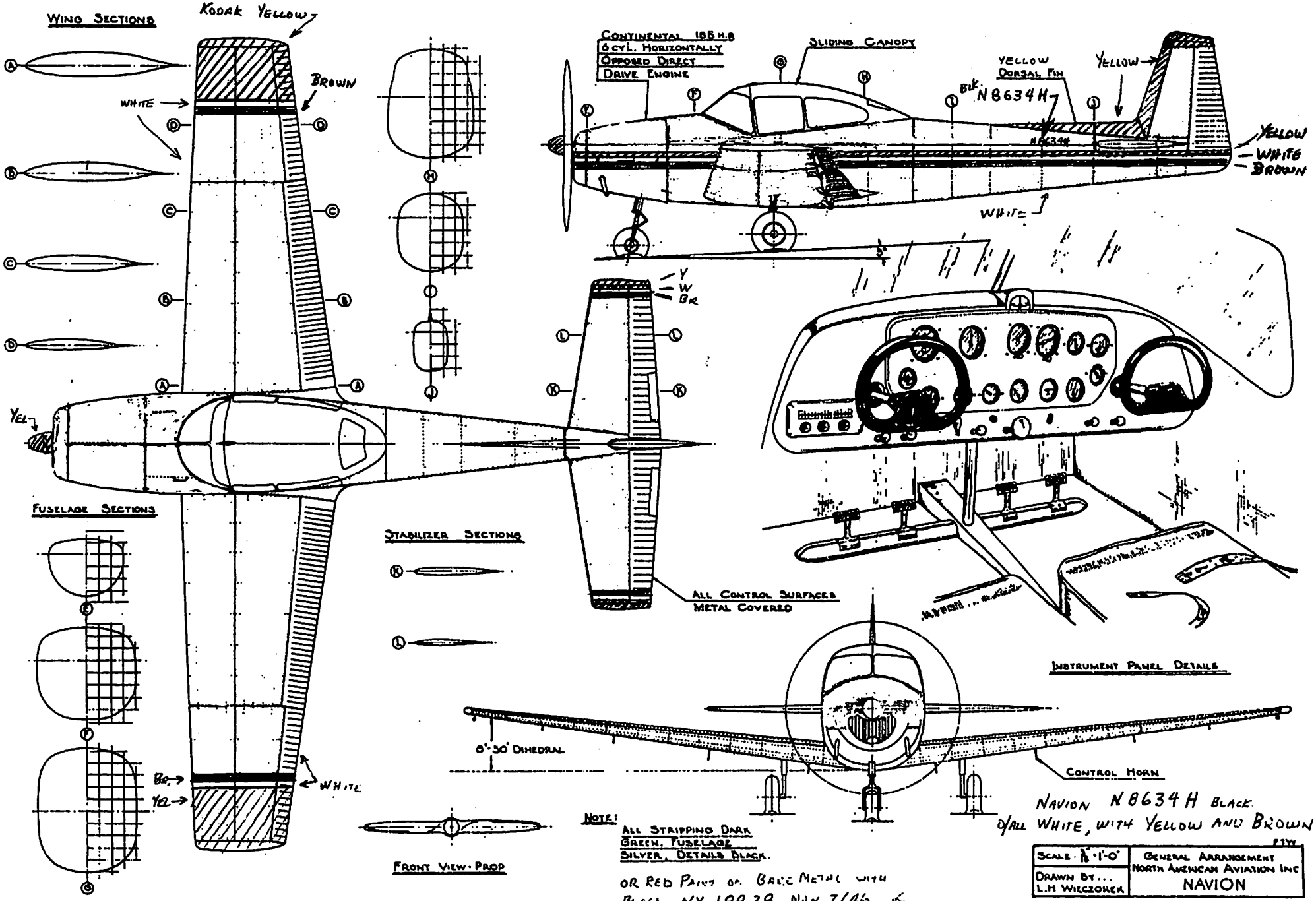
After writing that, I have decided to run you a Xerox of that page, so you can see the markings. I am sorry I can not do better for you as to marking information, but I have very little information on the Navion other than the Earl Stahl dwg., a very large scale factory general arrangement dwg., one or two other published bits. Your coverage is quite comprehensive in Crosswinds #76.

None of my tales contributes a thing to building a model of the Navion, but perhaps they will give you a chuckle reading them anyway.

Russ, again, thank you very much for your very generous response.

With very best regards,

Ken



NOTE:
ALL STRIPPING DARK GREEN, FUSELAGE SILVER, DETAILS BLACK.

OR RED PAINT ON BARE METAL WITH BLACK NX 18928 NAV. 7/46 & COVER FLYING MAY 1946.

NAVION N8634H BLACK
O/ALL WHITE, WITH YELLOW AND BROWN

P3W

SCALE 1/4"-1'-0"	GENERAL ARRANGEMENT
DRAWN BY... L.H WIECZOREK	NORTH AMERICAN AVIATION INC
	NAVION

AT HAMILTON, OHIO. 6/87. /RB.

MODEL AIRPLANE NEWS



The Navion weathers well, with many surviving examples seen at airports and shows. A June, 1987 trip to the WACO fly-in at Hamilton, Ohio found three Navions posing in color for CROSSWINDS. Don't be put off by the dull black and white dots; think color!

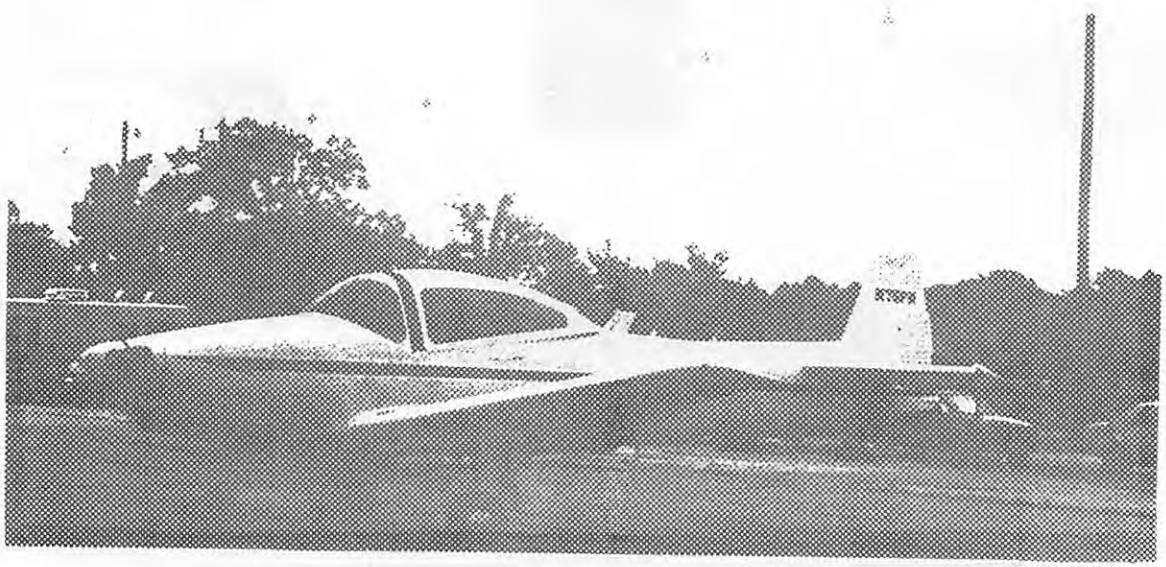
Navion N 8889 H is bronze brown with a white fuselage top and stripe. the prop spinner is aluminum. Photo above.

Navion N 8634 H is white with Kodak yellow wing and stab. tips. The fin trim, spinner, and top fuselage center stripe are also yellow. The white edged stripes on the tips, and under the white center stripe are dark brown. N 8634 H is above the fuselage yellow centerline stripe in small 2 1/2 inch high black numbers.

Navion N 75 PM is glossy white all over, with green trim and markings. The sharp fish hook stripe on the fuselage is green, edged in gold, with a script Navion in red on the stripe, about six inches aft of the cowl. The engine cowl has a modified shape, with cheek intakes and exhaust stacks at the cowl lower rear. The canopy is without the rear vertical post. N 75 PM on the fin and rudder is green (a dark grass green). The spinner is white, with a Hartzell prop. The Hartzell decal is a slanted up red stripe on a gold oval with a white outline. Photo below.

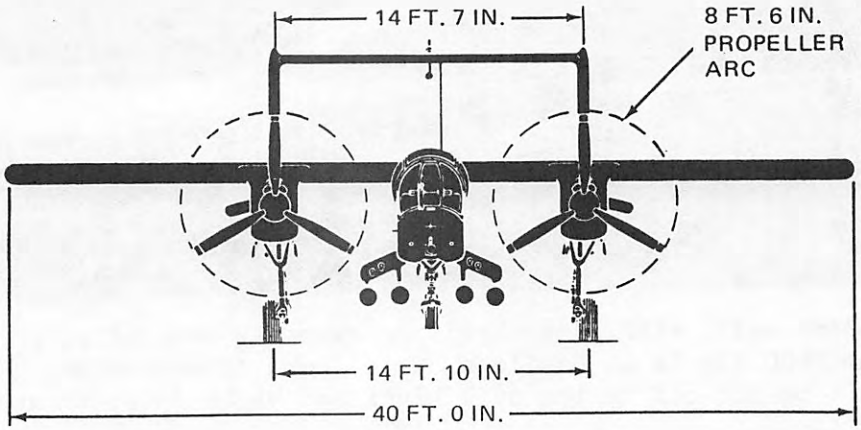
Don Helmick, who did most of the restoration work on the Roscoe Turner #25 Wedell Williams race plane, flies to work daily to the TRW hanger at Cuyahoga County airport in his all tan Navion, with a brown stripe.

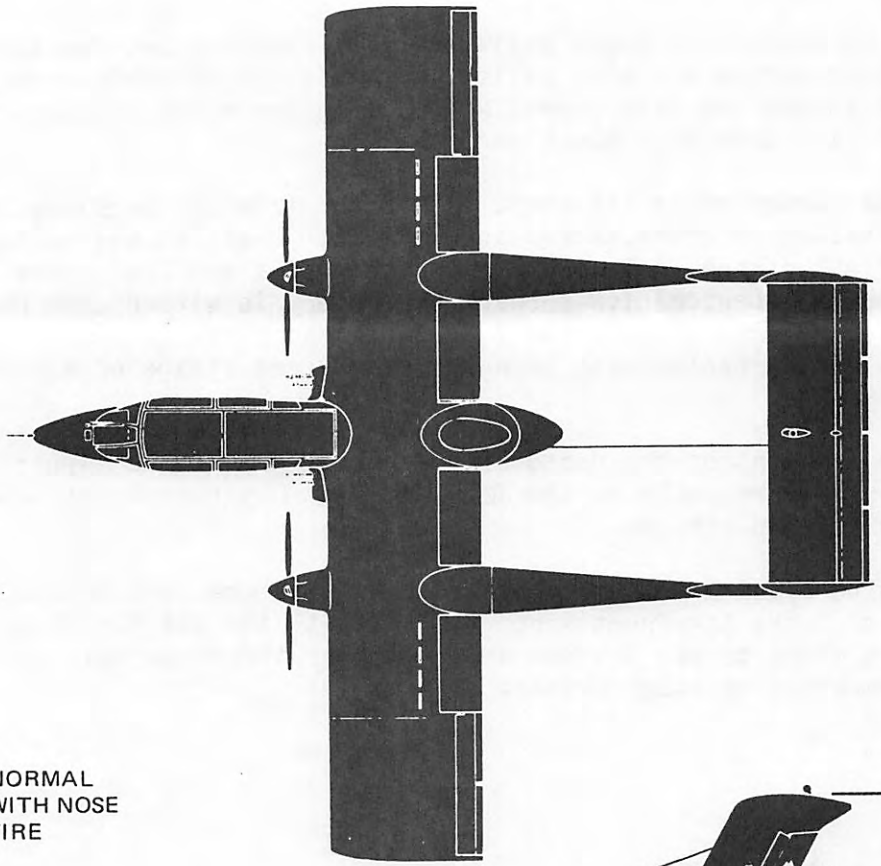
Another Navion with faded light blue trim sits at the bone yard behind Aviation High School at the East end of Burke Lakefront Airport. A trip to the EAA Fly-in at Oshkosh July 29 - Aug. 6 is a great place to see Navions and what else turns you on! Take color film, it's a snap to record markings by color prints.

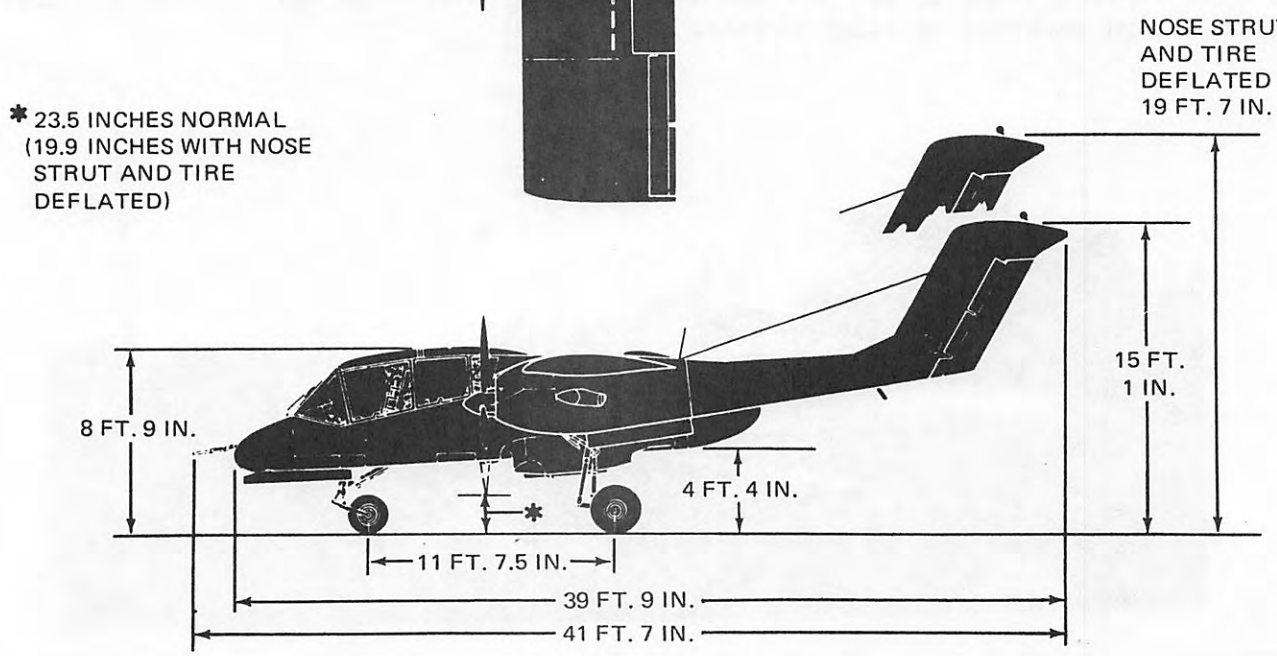


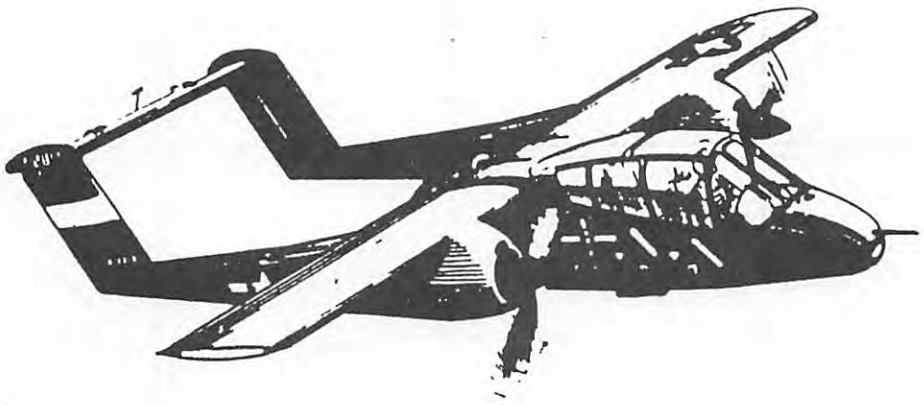
N 75 PM

OV-10A AIRCRAFT









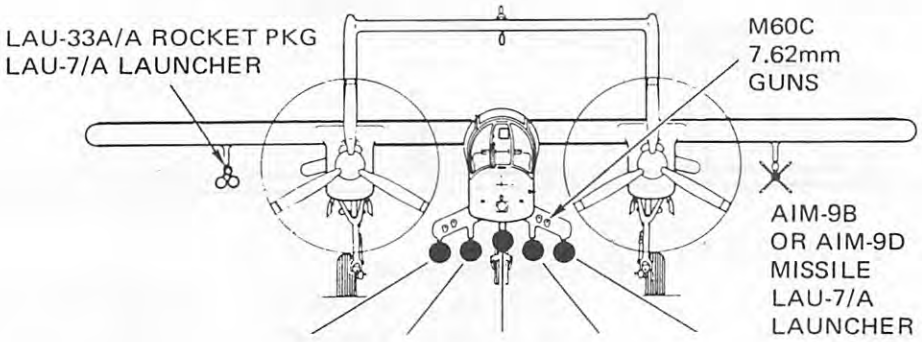
NAA OV-10A BRONCO TWIN

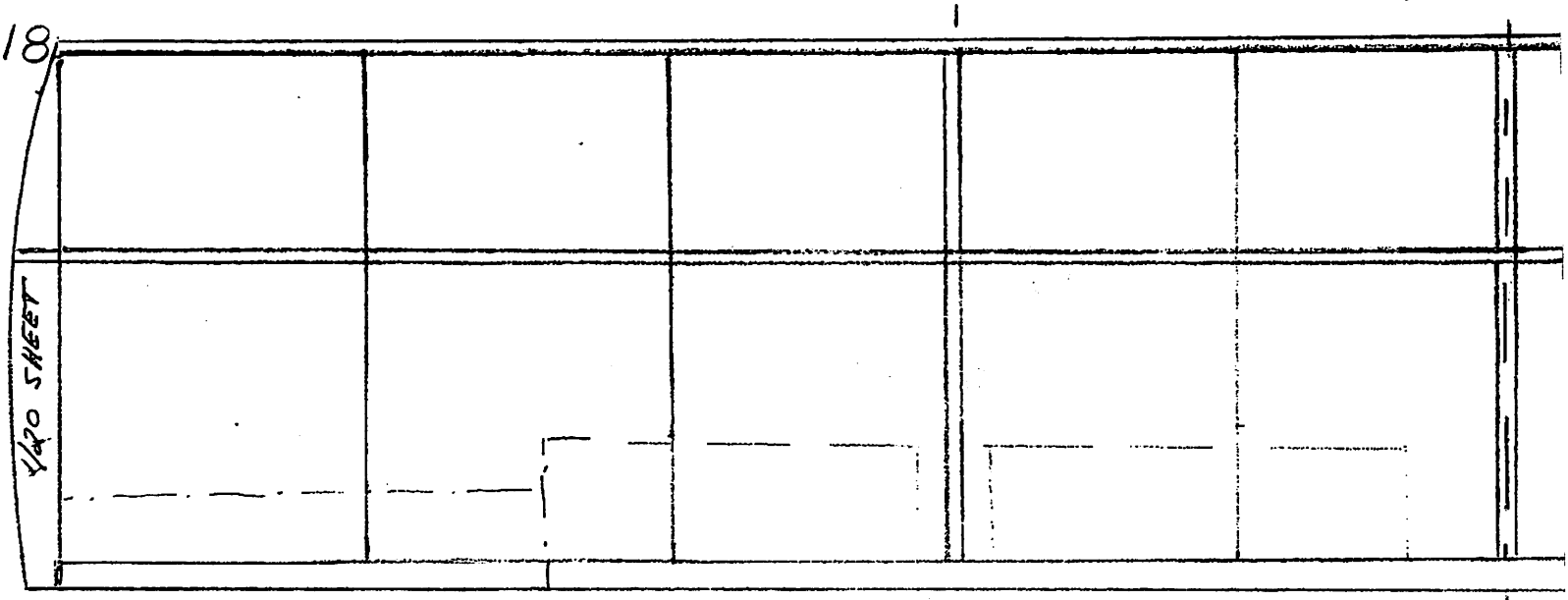
A flip of Mike Zand's twin head coin brings us to the North American Rockwell profile OV-10A feature. Mike's fondness for a the Walt Mooney 14 inch wingspan 1/32" sheet wood coin fighter in Sept., 1967 MAN is expanded to 16 inch span barn doors. Walt used a 6" wing profile hand launch glider to determine that no dihedral was required for flying.

Flying time can be extended with longer nose motor cowls, or with motor stick extensions to or past the spinner shape. Walt put the center of gravity at 31 % of wing chord, or about 1 inch behind the wing leading edge of a 16 inch wingspan. Walt used a two (2) hook modified egg beater to wind both motors. The left side prop rotates clockwise from the front view in "left hand rotation". Walt suggests this rotation to wash air above the top wing surface out to counter tip vortex rotation (air leaking around wing tips from lower high pressure side into low pressure wing top side.) This rotation also works to wash air in under the wing and back towards the under stab for lift. But the high stab location on the OV-10A may be above effective prop wash? Too much theory causes heavy air.

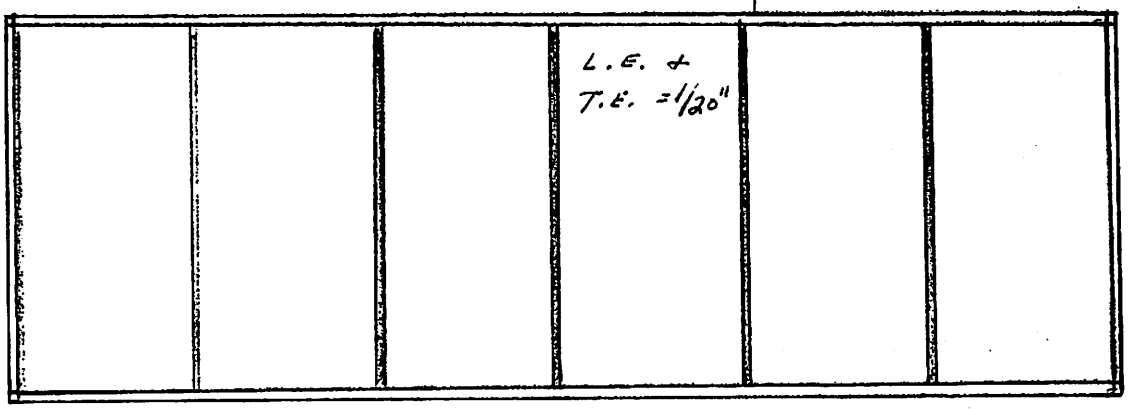
A Jumbo size 36 inch wingspan twin Bronco plan #3803 by Tom Houle is available from March, 1980 Model Builder. A 13 inch Peanut "enlargement" will just fit CROSSWINDS to tease you for a copy of the Jumbo plan. The prop rotation on the Tom Houle Jumbo is reverse Walt's! If want to use both standard rotation props, try using more up thrust (less down) on the motor trim on the inboard side of model circle. For example, if the model turns left in power run, put more down thrust in the outboard,or right motor nose block, Clear as mud 'Nes Paw????, but try it for use on the twin engine subject inspired by Dennis Norman's next issue of CROSSWINDS #78 . The Twin issue is waiting for this issue to clear through the Federal Bureau of Pony Express, and will follow close behind.

OV-10A color options from the NAR Columbus, Ohio Division SERVICE NEWS July/August 1970 include # USAF 14662 black numbers on all over light grey, with an all white wing top. Bronco # NAVY 55470 in black numbers on olive booms and pod has light grey undersides, and a white wing top. Spinners are olive. MARINES 55467 in black on olive booms also has the white top over grey wing. Star and bar insignia and USAF spinners are black. Prop tips are white with a red band. Nice blankets. Help preserve the North American Bronco. Send your $10 to CROSSWINDS at the Blue Fox Base ranch. Ya hoo; take the high trail to Geneseo!



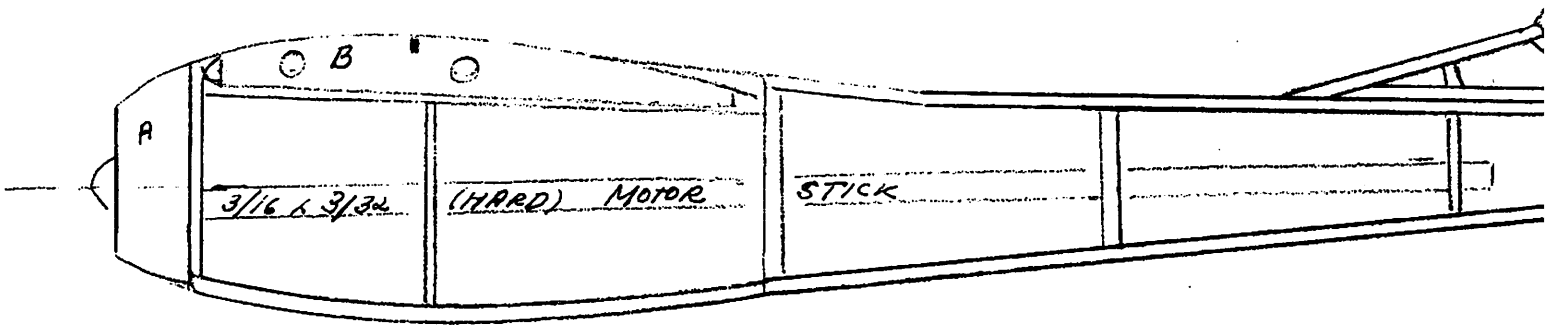


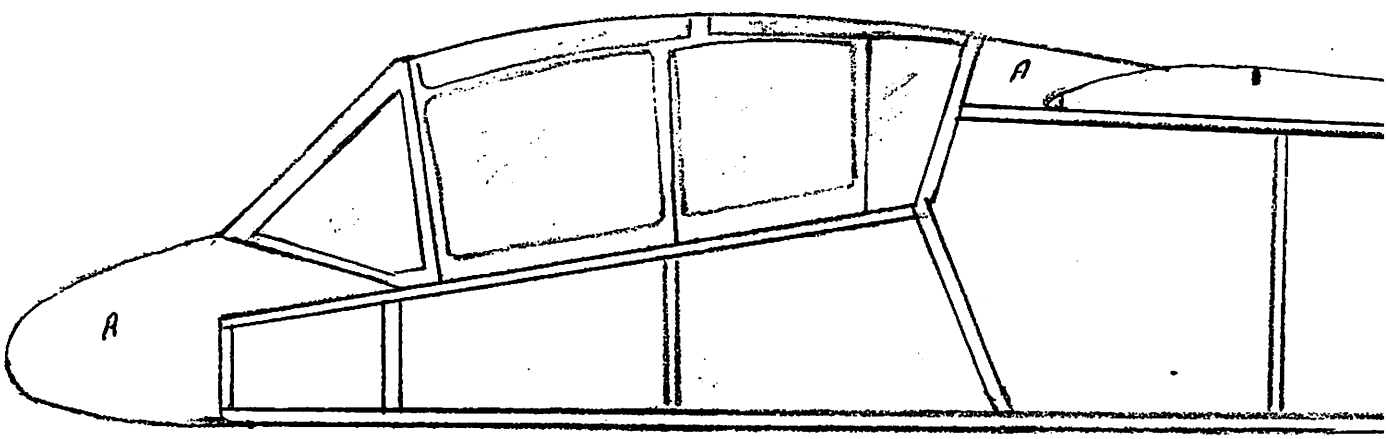
ANGLE WING TIP





STAB RIBS
1/32 FIRM STOCK

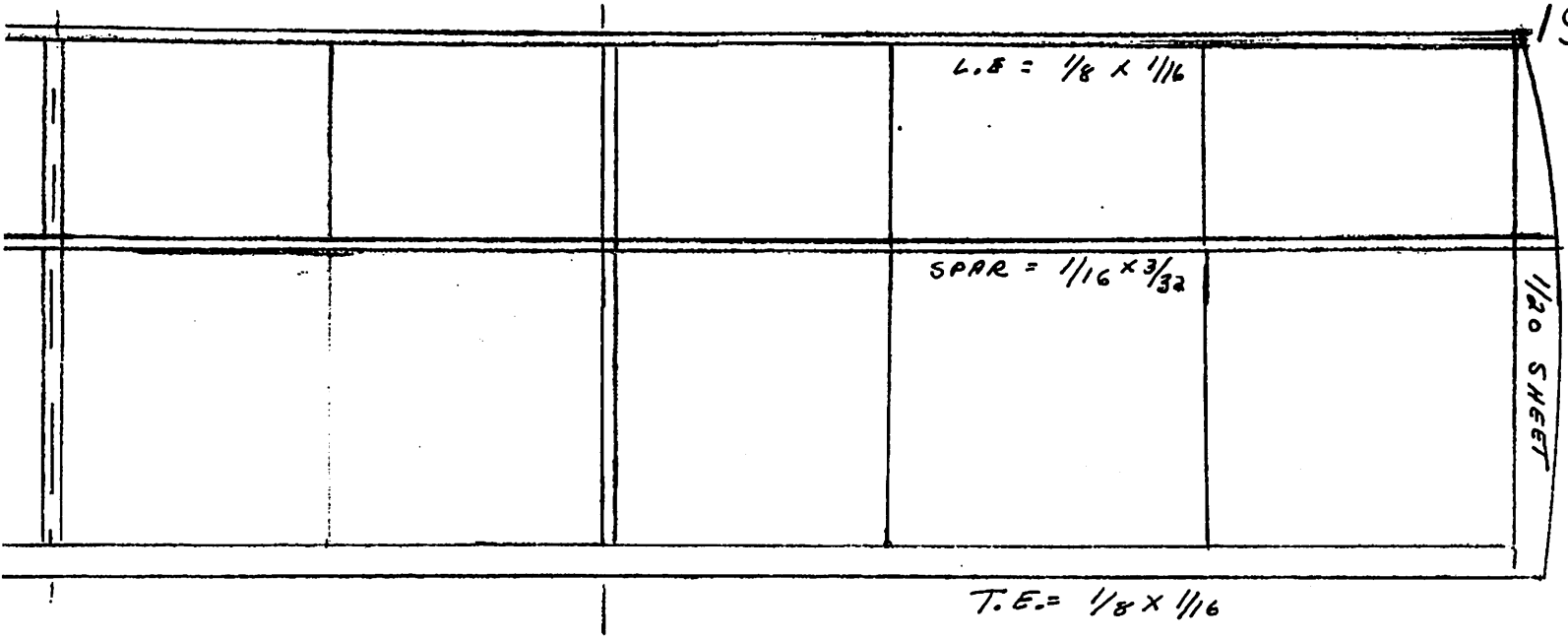




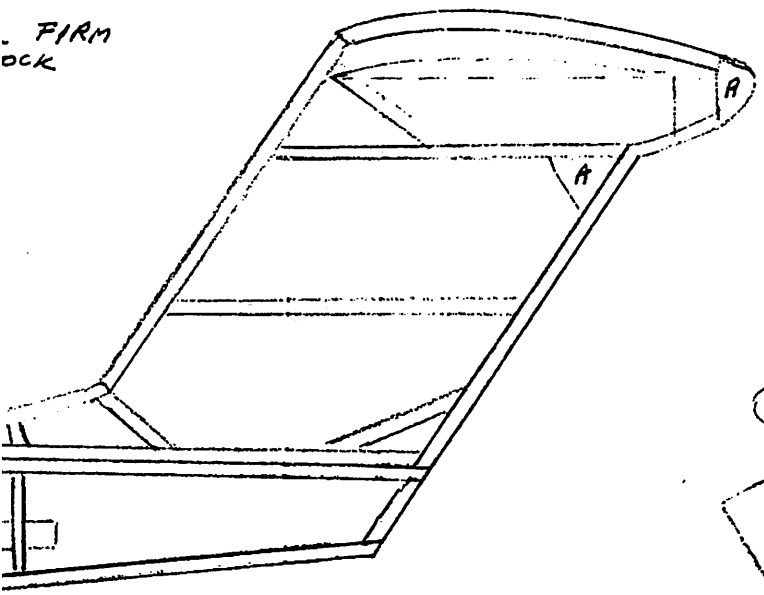
A = 1/16 SHEET
DRAW CABIN OUTLINES WITH FINE LINE MARKER

B = WING RIBS
8 = 1/32 SHEET
2 = 1/16 SHEET
1 = 3/32 SHEET

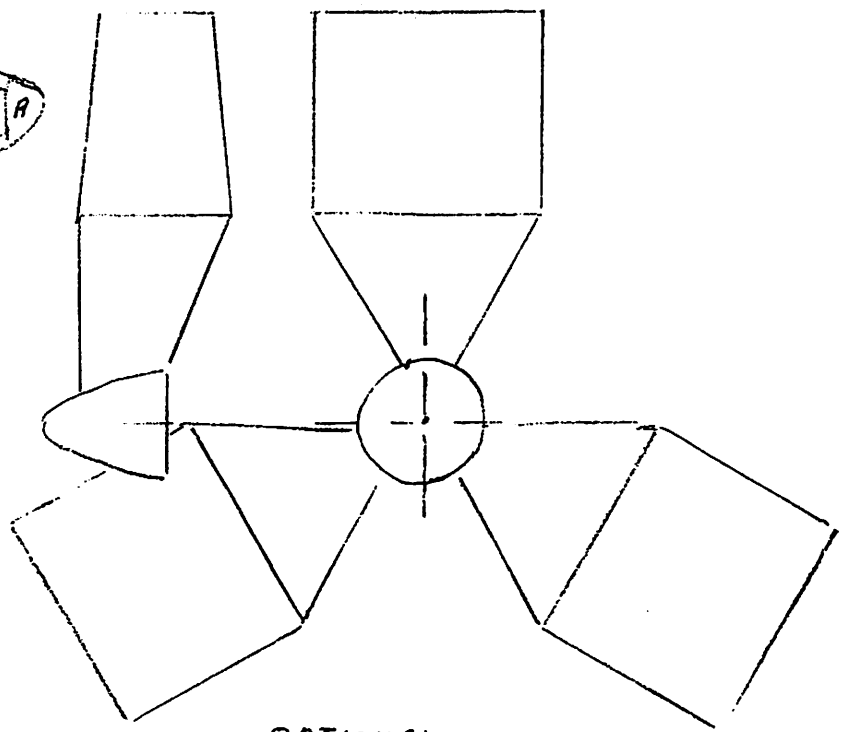
PUNCH HOLES IN RIBS TO LIGHTEN



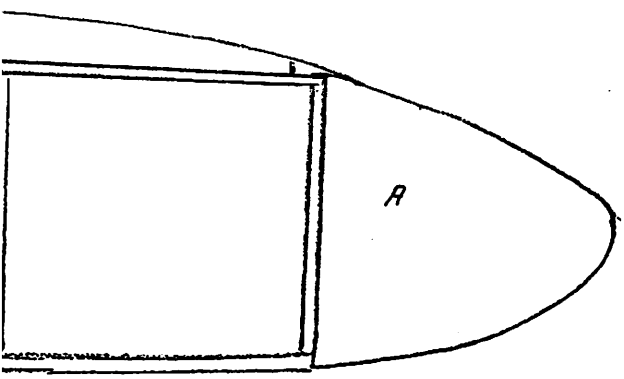
RIBS
FIRM
OCK



POD & BOOMS
1/16 SQ. MED. HARD



OPTIONAL
3 BLADE PROPS
1 RIGHT
1 LEFT



OV-10A Bronco

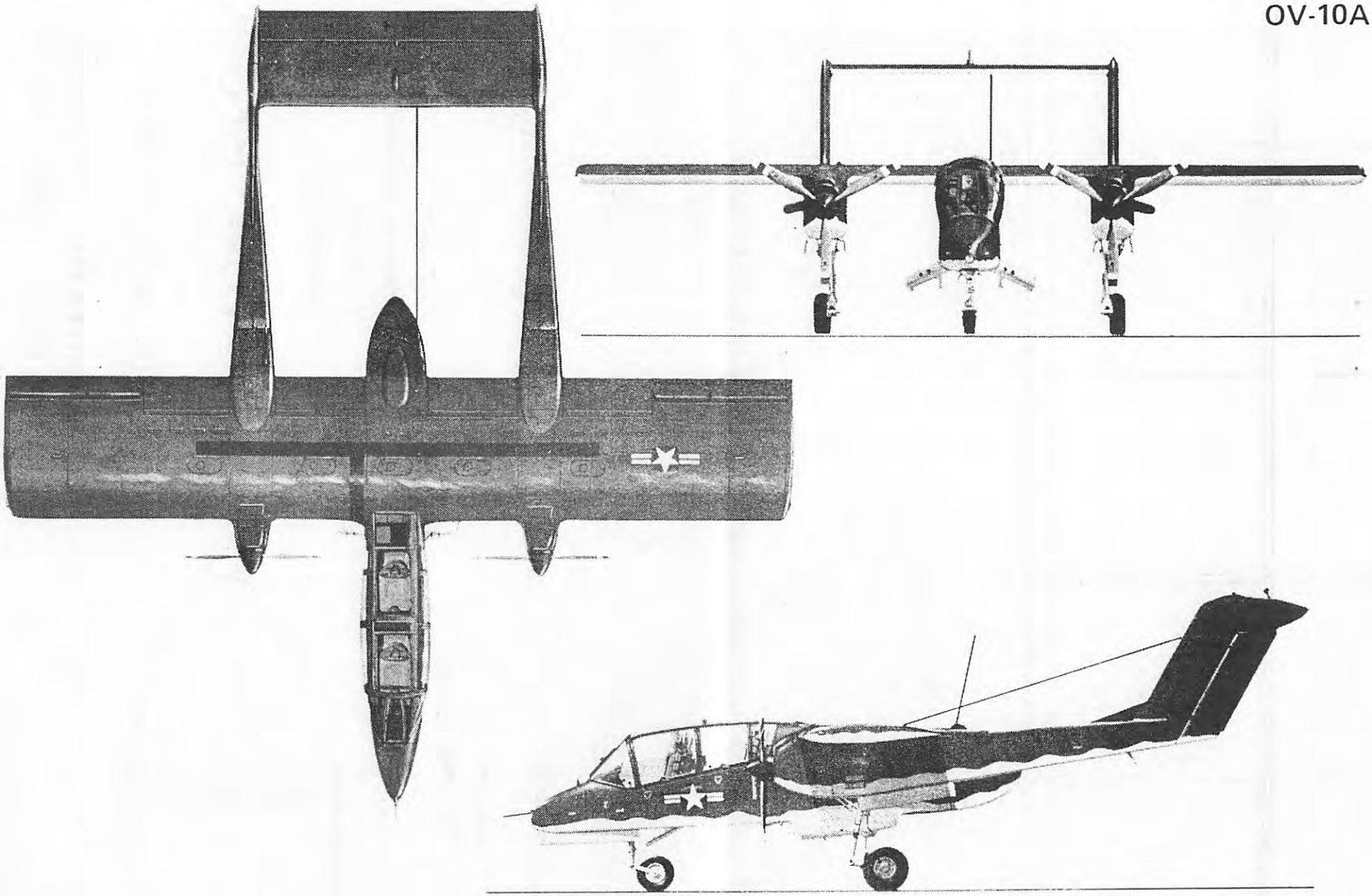
NO-CAL TWIN

MICHAEL C. ZAND
CFFS SEPT. 1987

approximately 1000 pounds lighter and has a larger cargo bay.

For operation in remote areas, the Bronco has a emergency, the Bronco can use high octane or automotive fuel in place of jet fuel with only a slight degradation in power.

OV-10A



PERFORMANCE AND SPECIFICATION DATA

RANGE:

- 700 nautical miles with internal fuel
- 1200 nautical miles with 150-gallon drop tank

THE 1988 FAC NATS

INFORMATION SHEET No. 2, FEBRUARY 1988

CONTEST DIRECTOR

Allan Schanzle
20008 Spur Hill Dr.
Gaithersburg MD 20879
(301) 840-5884

DATE: July 8th, 9th and 10th, 1988.

TIMES: Friday July 8: Scale Judging, 7:00 PM - ?
Saturday July 9: 9:00 AM to 4:30 PM.
Sunday July 10: 9:00 AM to 4:00 PM.

LOCATION: National Warplane Museum, Geneseo, New York.
Scale judging at State University of New York (see below).

ENTRY FEE: $13.00 by June 15th, $15.00 after June 15th.

LODGING: Dormitory rooms and meals will be available at the State University of New York, Geneseo, New York. Cost is $112.00 for double occupancy, $128 single occupancy. This includes a room for Friday, Saturday, and Sunday nights and:

Dinner,	Fri July 8th
Breakfast,	Sat July 9th
Banquet dinner,	Sat July 9th
Breakfast,	Sun July 10th
Dinner,	Sun July 10th
Breakfast,	Mon July 11th

The following motels have been recommended by the University. Reservations for these facilities must be made directly with the motel.

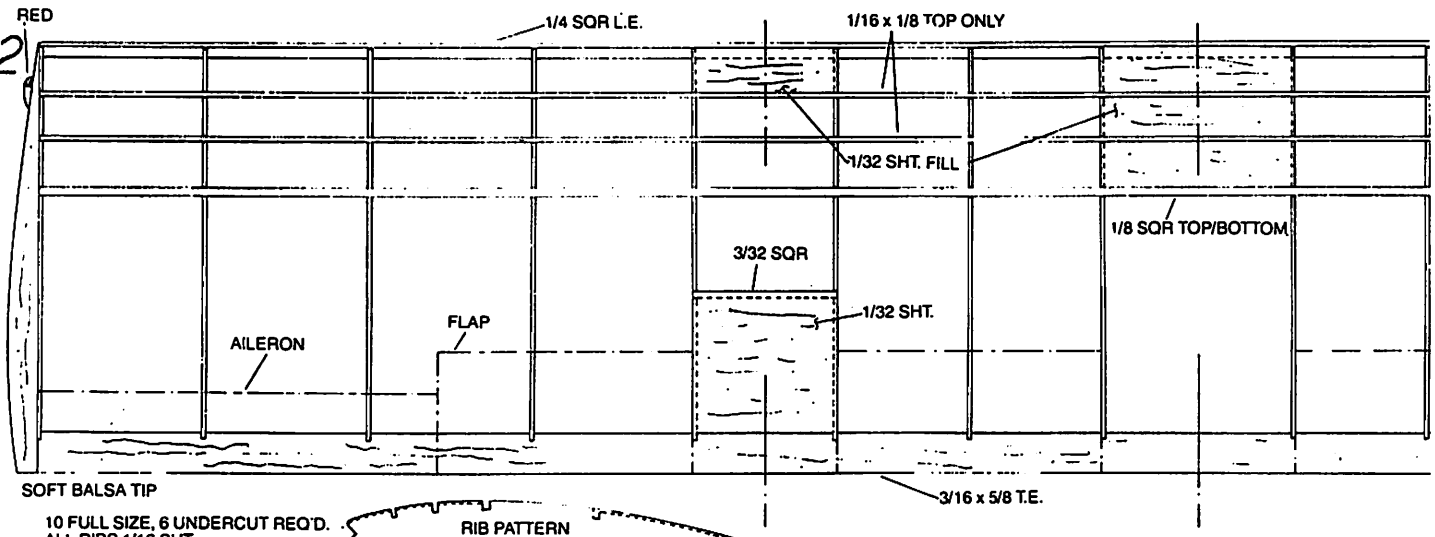
GENESEO INN	SUPER 8 MOTEL	HOLIDAY INN
4242 Lakeville Rd	1000 Lehigh Station Rd	1111 Jefferson Rd
Geneseo, NY 14454	Henrietta, NY 14467	Henrietta NY 14623
(716) 243-0500	(716) 359-1630	(716) 475-1510

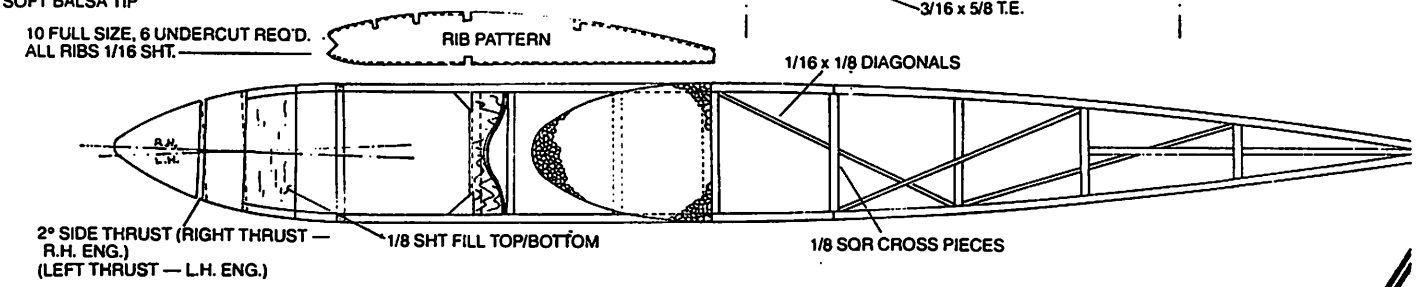
A block of 15 rooms has been set aside at the Geneseo Inn. We suggest you make your reservations early. The University Alumni is having their reunion the same weekend as the NATS.

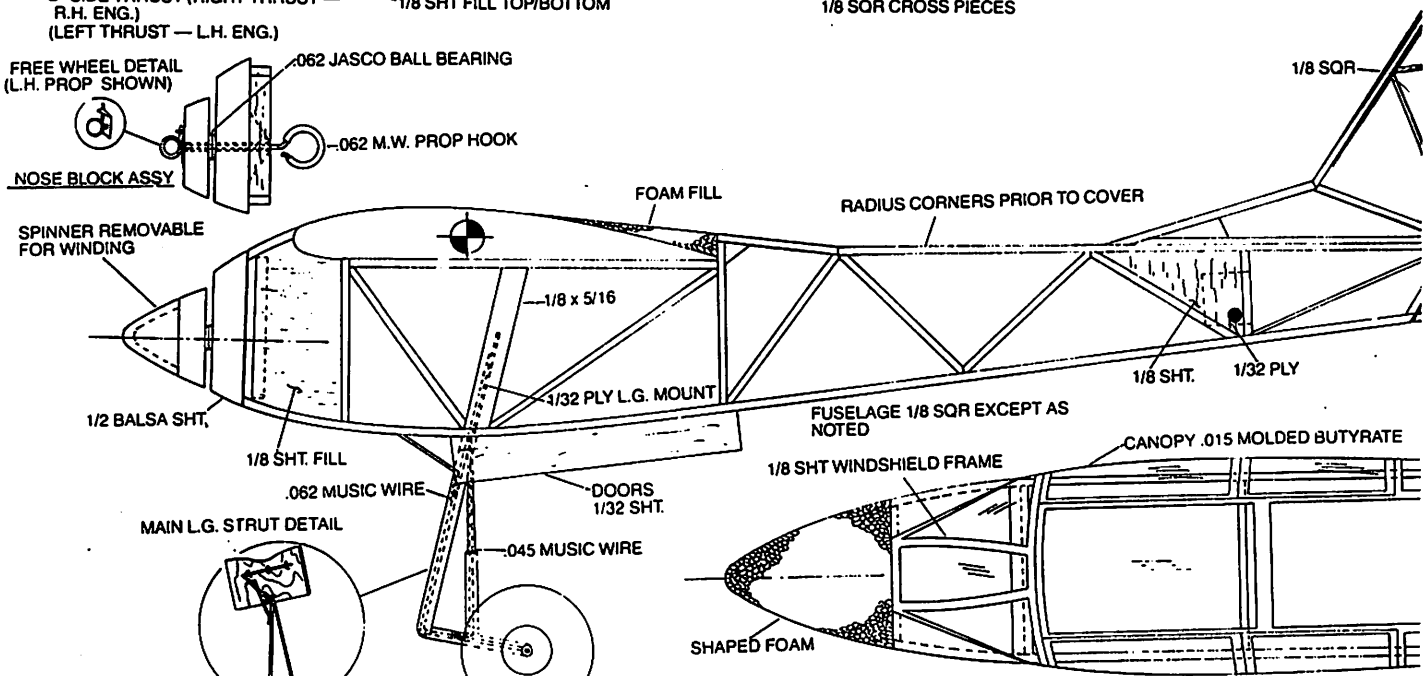
If you wish to stay at other facilities, the price for the banquet alone is $ 16.00.

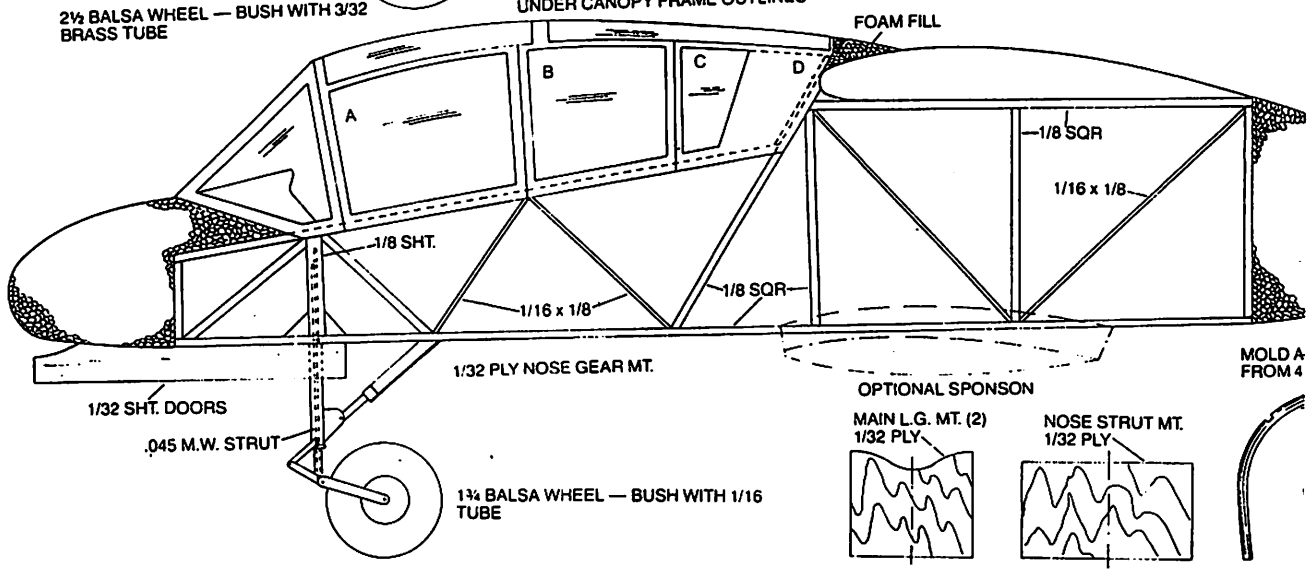
RESERVATIONS: To make reservations, send a check, payable to FAC NATS MK VI, to:

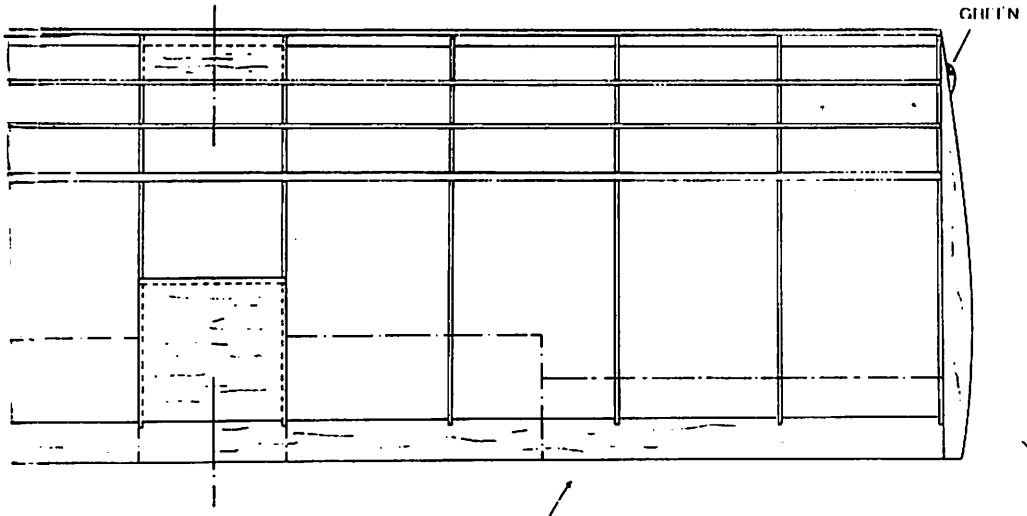
Doug Buchanan
10 Orchard Dr.
Thurmont MD 21788

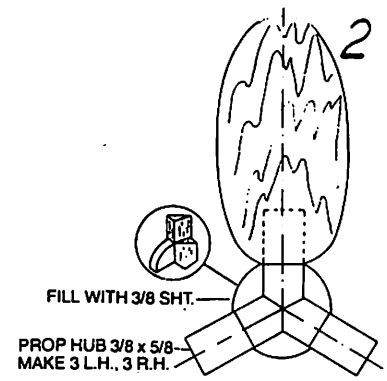

RED
1/4 SQR L.E.
1/16 x 1/8 TOP ONLY
1/32 SHT. FILL
1/8 SQR TOP/BOTTOM
3/32 SQR
1/32 SHT.
FLAP
AILERON
SOFT BALSA TIP
3/16 x 5/8 T.E.


10 FULL SIZE, 6 UNDERCUT REQ'D.
ALL RIBS 1/16 SHT.
RIB PATTERN
1/16 x 1/8 DIAGONALS
2° SIDE THRUST (RIGHT THRUST — R.H. ENG.)
(LEFT THRUST — L.H. ENG.)
1/8 SHT FILL TOP/BOTTOM
1/8 SQR CROSS PIECES

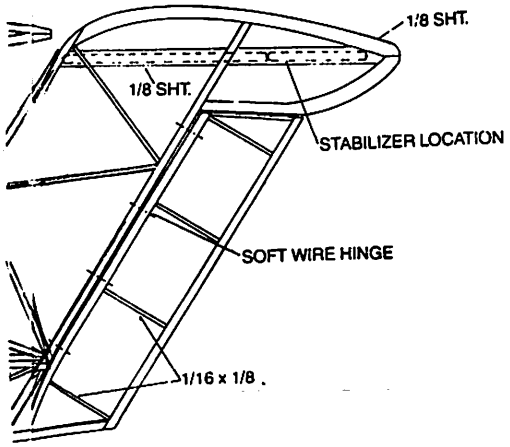

FREE WHEEL DETAIL
(L.H. PROP SHOWN)
.062 JASCO BALL BEARING
.062 M.W. PROP HOOK
NOSE BLOCK ASSY
1/8 SQR
FOAM FILL
RADIUS CORNERS PRIOR TO COVER
SPINNER REMOVABLE FOR WINDING
1/8 x 5/16
1/32 PLY L.G. MOUNT
1/8 SHT.
1/32 PLY
1/2 BALSA SHT.
1/8 SHT. FILL
FUSELAGE 1/8 SQR EXCEPT AS NOTED
.062 MUSIC WIRE
DOORS 1/32 SHT.
CANOPY .015 MOLDED BUTYRATE
1/8 SHT WINDSHIELD FRAME
MAIN L.G. STRUT DETAIL
.045 MUSIC WIRE
SHAPED FOAM
2½ BALSA WHEEL — BUSH WITH 3/32 BRASS TUBE

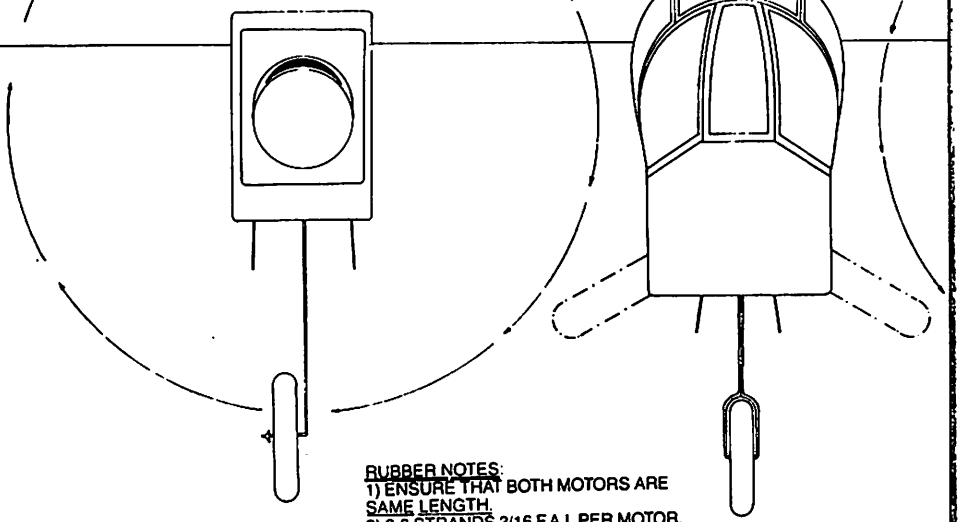

CANOPY BOWS LOCATED UNDER CANOPY FRAME OUTLINES
FOAM FILL
A
B
C
D
1/8 SQR
1/16 x 1/8
1/8 SHT.
1/16 x 1/8
1/8 SQR
1/32 PLY NOSE GEAR MT.
OPTIONAL SPONSON
MOLD A FROM 4
1/32 SHT. DOORS
.045 M.W. STRUT
1¾ BALSA WHEEL — BUSH WITH 1/16 TUBE
MAIN L.G. MT. (2) 1/32 PLY
NOSE STRUT MT. 1/32 PLY



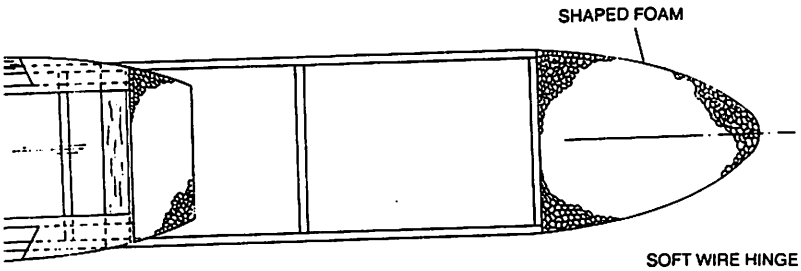


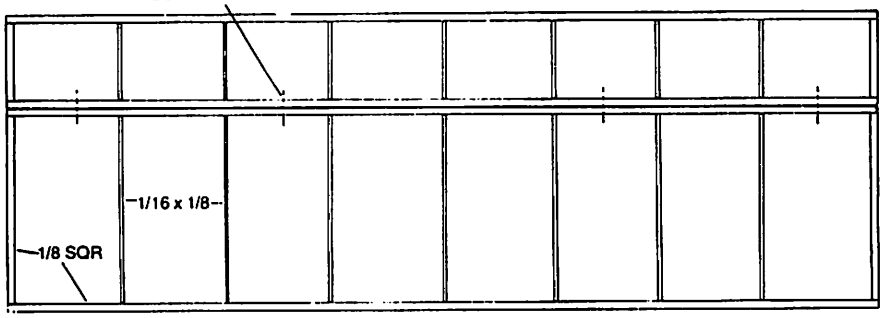
1/32 PLY PROP BLADES
MOLD AROUND 4" DIA. BOTTLE AT 15° ANGLE.

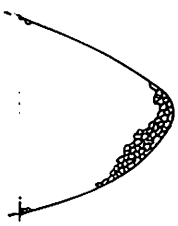




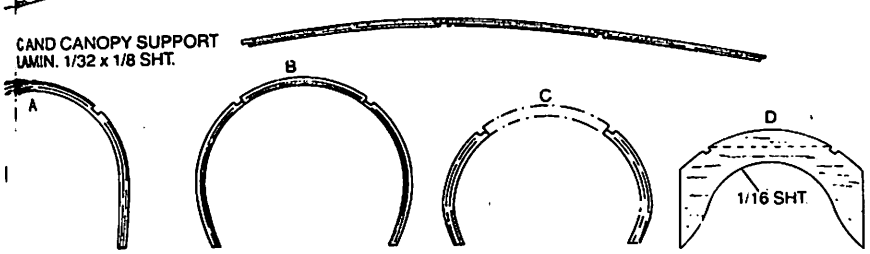
RUBBER NOTES:
1) ENSURE THAT BOTH MOTORS ARE SAME LENGTH.
2) 6-8 STRANDS 3/16 F.A.I. PER MOTOR.
3) MOTORS ARE 26" LONG (BRAID PRIOR TO INSERTING).
4) WIND MOTORS IN OPPOSITE DIRECTIONS. NOTE ROTATION.







BULKHEADS & PATTERNS



NORTH AMERICAN OV-10A BRONCO

*DESIGNED AND INKED BY TOM HOULE
*SPAN: 36" WEIGHT: 7 OZ.
AREA: 234 SQR. IN.

Courtesy 3/80

MODEL BUILDER magazine
Plan No: 3803

For advanced reservations (received by June 15th).

Contest Fee only:	$ 13.00
Contest Fee plus banquet:	$ 29.00
Contest Fee plus banquet plus double occupancy:	$125.00
Contest Fee plus banquet plus single occupancy:	$141.00

We cannot guarantee dormitory lodging for reservations received after June 15th, nor can we refund cancellations received after June 15th.

SANCTION: This will be an AMA sanctioned contest. You will be required to show a current AMA card or a receipt of dues within 30 days prior to the event (AMA regulations). We are, however, in contact with AMA in an attempt to get approval for a special two-day fee which will allow non-AMA members to fly for less than the annual AMA dues. THIS HAS NOT YET BEEN APPROVED.

JUDGING: Judging for the scale events at the 1988 FAC NATS will be held on Friday evening, July 8th. Planes that are not submitted on Friday evening will be eligible for judging between 10:00 and 11:00 AM of the day of the event. But it will be to your benefit to get the models submitted on Friday evening. The principal advantage in doing this is that you will not have to wait for the judges to return your model after a qualifying flight. You can, therefore, fly without concern of loosing your little pride and joy in a thermal and never have a chance to get it judged, or damaging it on a test flight. Also, you will have the option to select what you think is the best time of day for flying your type of model.

Judging scores for a model will NOT be posted until an official flight has been recorded.

Models must be submitted for judging in the form in which they will be flown, except for prop, rubber motor, and trim tabs.

We have reserved space close to the dormitories as the judging site. All aircraft that are submitted on Friday will be displayed on tables for all to see.

MASS LAUNCH EVENTS: The number of entries in the mass launch events in 1986 was so large that it became more of a human endurance contest than a model airplane contest. Things simply got out of control, and considerable concern was expressed by some about the health hazards for us elders. For this reason, ALL mass launch events will have qualifying flights in accordance with the rules as set down below. The top 10 qualifiers will be selected for each event. The 40 point minimum guideline will be enforced by the event director and the CD, and if a model has a questionable scale fidelity, two official judges will be called upon to make a decision on the 40 point criterion. If a model is eliminated because it does not meet the required minimum, then the 11th qualifying model will be called upon to replace the eliminated aircraft, provided it passes the 40 point minimum.

The 10 eligible models will be broken down into two groups, each consisting of 5 aircraft. The first round will eliminate two aircraft from each group. The second round will combine the two groups for a total of 6 models, and 5 successive rounds will be flown which eliminate 1 model per round. This will require no more than 6 motor winds by any pilot.

QUALIFYING FLIGHTS: No qualifying flights will be required for the judged events. For the mass launch events, there will be a change from what was announced in INFO SHEET No. 1, which stated that the qualifying flights would be held as defined in the 1988 FAC RULES for the Shell Speed Dash. The difference is that there will be NO minimum flight time, and you will be given only ONE attempt for your official flight. So don't dork a launch and have a three second flight, because it will count as the one and only official time. This limitation on the number of qualifying flights is a necessity due to the number of contestants, events, and time constraints for the contest. In addition, it represents the spirit of the mass launch concept.

Qualification times will NOT be posted. The top 10 qualifiers for each mass launch event will be noted on the public display boards, as will the next few potential replacements should one of the top 10 be disqualified due to the 40 point minimum requirement.

You may submit your qualifying time for a Sunday event on Saturday.

Qualification flights for mass launch events will be timed ONLY by official timers. All other flight times may be recorded by official timers or contestants other than the flyer.

EVENTS: JUDGED EVENTS:

FAC RUBBER SCALE	Saturday
FAC POWER SCALE	Saturday
FAC JUMBO SCALE	Sunday
GHQ PEANUT SCALE	Sunday
EMBRYO ENDURANCE	Saturday

MASS LAUNCH EVENTS:	DAY	TIME	QUALIFYING FLIGHTS BY
WW-I PEANUT (Multi-wings)	Saturday	1:00 PM	12:00 NOON
GREVE	Saturday	2:00 PM	1:00 PM
WW-II	Saturday	4:00 PM	3:00 PM
WW-I (Multi-wings)	Sunday	1:00 PM	12:00 NOON
THOMPSON	Sunday	2:00 PM	1:00 PM
GOLDEN AGE	Sunday	3:00 PM	2:00 PM

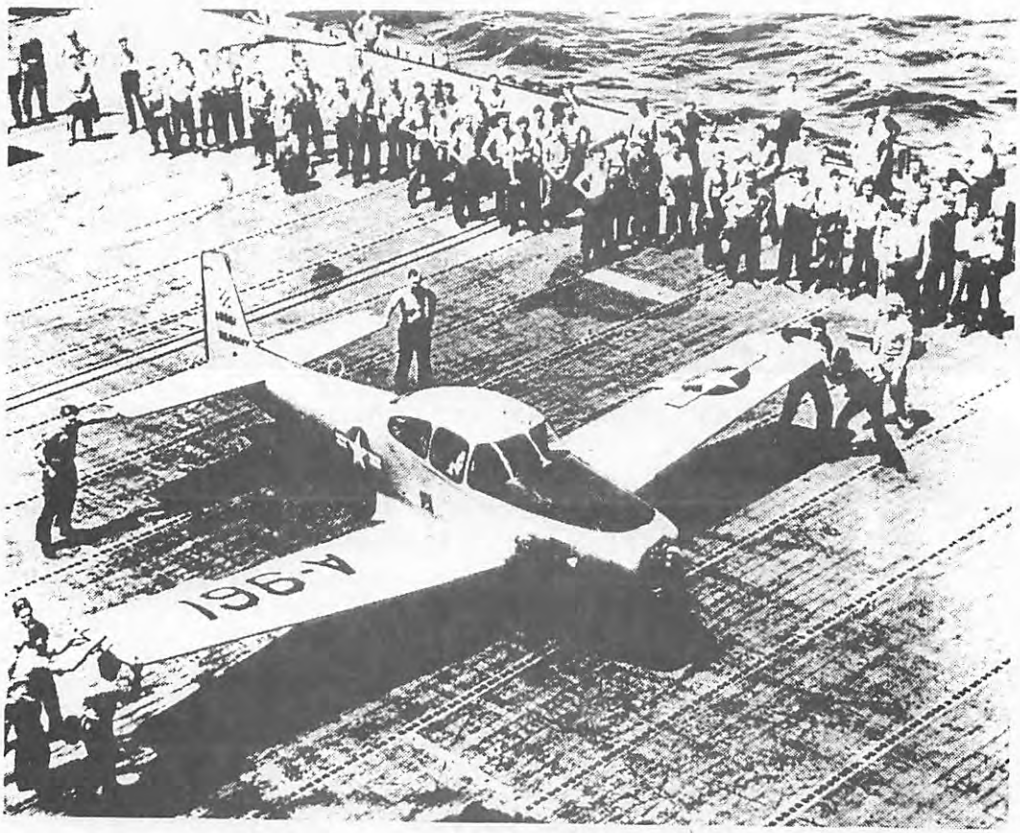
No official flight times will be recorded after 4:30 PM on Saturday and 4:00 PM on Sunday.

TROPHIES:

Grand National Champion.
Engraved plaques through 5th place.
Earl Stahl Trophy (awarded at the banquet).
Special achievement (if warranted).
Three special trophies for models of U.S. Navy aircraft. These have been donated by Capt. Pat Daily, USN. The decision for these awards will be made based upon models that are submitted for judging on Friday evening.

THERMAL DETECTORS:

Two mylar thermal detectors will be placed on the field for use by all contestants. No other thermal detectors of any kind will be permitted.



Another visitor aboard a carrier at sea was this L-17 Navion. This photo taken during the Korean war when a ground forces commander had to confer with a Navy task force commander. The L-17 was used as a flying staff car for field grade officers. Many L-17's had to fly "stiff legged" in Korea when their touchy hydraulic systems gave out. Even though they were maintenance bears, the L-17 did a rather good job during its tenure until replaced by the L-20 Beaver.

(4) 71961 , A-961 Courtesy Air Classics Vol. 3, #4 March, 1966 *U.S. Army*

THE CLEVELAND FREE FLIGHT SOCIETY
PRESENTS

Fifth Annual A.M.A. sanctioned contest for free flight model airplanes Sunday, March 20, 1988. 10:00 a.m. to 5 p.m.

Estabrook Recreation Center
4125 Fulton Avenue
Cleveland, Ohio 44144

10:00 a.m. to 12:30 p.m.

1. EZB-- Scoring will be the longest of five official flights. An official flight is 30 seconds and two attempts will count as one official.

X* NOVICE PENNYPLANE-- *Unofficial event courtesy director Dan Briehl.

12:30 a.m. to 5:00 p.m.

2. No-Cal Scale-- F.A.C. Rules

3. F.A.C. Peanut Scale All types except Hi-wing cabin and parasols.-- Models must be presented for judging by 1:00 p.m. Models must be tissue covered. Best flight of three. 20 seconds is official. Scale data should accompany model.

4. Hi-wing cabin and parasol wing peanut scale.-- Same as event #3.

5. W.W. I Peanut Biplane Combat-- Flown at 2:30 p.m.

6. W.W. II - No-Cal Combat-- Flown at 4:00 p.m. One mass launch only.

7. Jetco R.O.G.-- May be flown from 12:30 to 2:00 p.m. Best of three, 30 seconds is official. Must be built according to CFFS reprint of plan. 5½" maximum diameter prop which can be modified only by sanding thin. Prop must be plastic. Solid motor stick. No camber in wing due to structural changes or baggy tissue. Tissue covering. Minimum weight of model must be 3.5 grams without rubber.

8. F.A.C. Pistachio Scale -- One event for all types of models. Wingspan not to exceed 8". Models must be tissue covered. F.A.C. scoring applies. Best flight of three and 15 seconds is official.

All events are JSO unless there are three or more junior/ senior contestants in an event. Mass Launch events are JSO regardless.

Prizes

Seven or more entries-- 3 prizes per event.
Four to six entries-- 2 prizes per event.
One to three entries-- 1 prize per event.

Entry fee

Open-- $4 first event, $1 each additional event.
$7 maximum.

Junior and Senior-- $2 flies all.

No record trials at this contest.

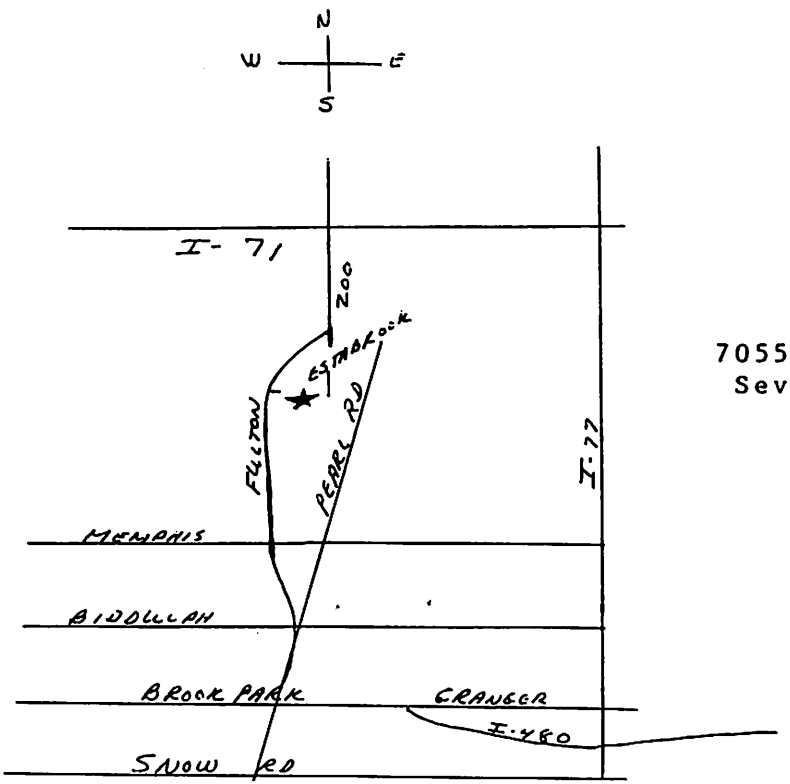
NO-CAL PROFILE SCALE

1. A simple event for recognizable profile models with a wing span limit of 16 inches.

2. Total of three flights to determine score. Highest total score wins. Flyoff to break ties.

3. Any flight of twenty seconds or more is official. All flights to be hand launched. No maximum flight time.

4. Model must have control outlines, registration numbers or letters, etc. Model must also have full landing gear, either one, two, or three legged, etc. no profile gears. Retractable gear may be built in the up position. Judges decision is final. Model must be in correct color scheme, have documentation to prove it.



Contest Director

Michael C. Zand
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Seven Hills, Ohio 44131

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