VOLUME LIV, NUMBER 3

MAY–JUNE 2020

FREE FLIGHT

THE NATIONAL FREE FLIGHT SOCIETY DIGEST

$5.95

New NFFS Event: Vintage Wakefield • Full-sized plans: Hawker Hunter and Walkalong Glider • Grogan on Power Model Stability and Trim • COVID Lockdown Builds • Golden Age 1/2A: "Honcho" • Polish F1N

DEPARTMENTS AND FEATURES

Detroit Balsa Bugs at the 1953 Olathe, Kansas semi-finals (L-R): George Xenakis, Erv Rodemsky, Don Kubina, and Bob Bienenstien (photo supplied by Joe Kubina)

National Free Flight Society
is an AMA-affiliated, nonprofit organization whose purpose is to preserve, enhance and promote the art, sport and hobby of Free-Flight model aviation in all its forms. Website: http://www.freeflight.org.

Contributions: Send photos, articles, 3-views, ideas, opinions to the appropriate contributing editor or to the editor. Photos may be high-quality, 300 dpi digital, color or black-and-white prints, but only glossy, jumbo to 5x7 format. Supply photo caption information, including identification of model and people in photo. NFFS Digest cannot be responsible for returning photos. Send contributions to editor via e-mail, on CD in Microsoft Word format, or plain text. Contributions are assumed to be exclusive.

Dues for U.S. membership are $58 for two years or $30 for one year, including mandatory 50-cent annual NFFS membership fee. Dues for those younger than 18 are $18 for two years; $10 for one year, including the same 50 cent mandatory annual membership fee. Email for subscription information: <membership@freeflight.org>.

On the Cover: Ken Phair of Centennial, Colorado has been busy during the lockdown completing conversions of these old F1Cs to AMA B/C/D Gas models. Ken last flew Free Flight in 1999 but plans a retunr in 2020. (Photo by Ken Phair)

NOSTALGIA GAS WHEEL RULE

I'm yielding my column space this issue to Dean McGinnes' opinion peice on the Nostalgia Gas wheel rule. For my part I believe Dean makes a strong argument for nixing the wheel rule, if for no other reason than consistency. In Nostalgia Rubber ROG is not required, and takeoff gear may be omitted. Anyway, give Dean's piece a read and send in any feedback. The input period has has just opened for the 2022 rulebook, so there's plenty of time for discussion and debate. —*Ed.*

Nostalgia Gas sprung from the Old Timer movement. The landing gear requirement is nearly word-for-word the same as SAM requirements. "What's wrong with it?" you might say. After all, it's shown on the plans and it's "part of the design."

Well, for me, I have lost two really good 1/2A Zeeks to that stupid wheel acting as a rudder, either spiraling in, or straightening out, causing a loop, and going off-pattern. The wheel had been deflected as a result of a DT landing. It doesn't take much, an offset nearly undetectable. It's nearly impossible to bend it back to its' original position. I have seen others meet the same fate. The wheel moved ever so slightly one way or the other when the wire strut deflected to absorb the landing shock. I actually avoid building gas models that show a wheel on the plan for that reason.

Dean and grandson Albert at the 2006 Nats.

During the Nostalgia period, many modelers substituted a skid for the wheel, or left it off altogether. It was a common practice, especially when Ron St. Jean and the Ramrods came along, VTO became the norm, and all that was needed was a simple skid to protect the engine. Models had to sit "unassisted" in the VTO position for some time to gain that precious 5 seconds of engine run.

There are some common sense provisions in the rules. Reinforcing known weak structures with ply, or even carbon fiber is allowed. Adding one turbulator spar in the forward third of the airfoil is allowed. Any covering material is allowed, even though Japanese tissue or silk was "part of the design." When VTO is allowed on our larger fields like in Colorado or California a single point is sufficient.

Let's make this change to simplify our lives.

Original rule:

5.5.4 Wheels and Skid

Models must have at least as many wheels and/or skids as shown on the construction plan. When scaling a model up or down, the scaling factor will determine the minimum wheel diameters. If the original plans show neither wheel nor skid, the option of using wheel, skid or no undercarriage is up to the builder. Some designs had versions with both wheels and skids. If the model is built from or scaled from one of these plans, the builder may use whichever undercarriage is shown on that plan

Change to:

5.5.4 Wheels and Skid

Wheels and skids, even if shown on the plan, are up to the builder. Number, diameter, placement, or omitting altogether are up to the individual builder.

Saves paper, and airplanes.

Dean McGinnes, Dothan, Ala.
flydean@att.net

GOLDEN AGE 1/2A UPDATE

Golden Age 1/2A is a NFFS Provisional Event. The Provisional status allows the event rules to be updated on an ongoing basis from experience gained from running the event. The updated rules during the provisional period do not need to be approved by the NFFS Competition Committee. When Golden Age 1/2A becomes an Official NFFS event, any proposed rule changes need to be approved by the Competition Committee.

With this in mind and after very careful consideration, the decision has been made to change the existing end date of 12/31/1969 to the new end date of 12/31/1975. This addition of five years to the Golden Age 1/2A event will open up some exciting new models to be built and flown. All the other existing rules will carry over without any change. Any models that are built within the new end date must comply with all the existing rules.

The start date for this change will be 1/1/2021, which will give time for an updated eligible model list to be compiled to include the models designed up to 12/31/1975. This will also give time for interested participants to nominate their favorite models from the new end date to be included on the new list of eligible models. A small sample list for the new era is provided for review.

Satellite 226/300/320 – 1970-74 – Bob/Bill Hunter
Bubba Clem – 1971 – Jim Clem
Half Nog – 1971 – Andy DeMello
Rambunctious – 1971 – Dick Mathis
Fire Wagon – 1971 – Jim Clem
Easy Rider – 1972 – Ray Monks
Stiletto III – 1972 – Bob Stalick
Geodetic Galaxie – 1972 – Vic Cunnyngham Jr.
Wiz-Rod – 1972 – Ron St. Jean
Pearl 450 – 1972 – Bill Chenault
Maverick – 1972 – Tom Hutchinson
Zingo – 1972 – Tom Hutchinson
Excelsior – 1973 – Dave Rounsaville
Upper Crust – 1973 – Gene Post
Lunar-Tic – 1973 – Harry Murphy
Sirocco – 1973 – Vic Cunnyngham Jr.
Orbiteer – 1974 – Dennis Bronco/ Sal Taibi
Shocer – 1974 – Mel Schmidt
Firedrake – 1974 – Larry Sciuranza
Bed Medicine – 1975 – Mike Ransom

—Mike Schwartz

JACK AND JEAN SHEFFER

Jack was born in Portland, Indiana Nov. 18, 1934 and was a graduate of Butler University in Indianapolis. He was a Lieutenant Colonel in the U.S. Air Force and served as a Weapons System Operator (WSO or "Wizzo") in B-58s. As with most Air Force personnel, he moved around a lot with his final assignment in Little Rock, Arkansas. I first met Jack in Fort Worth, Texas when he was stationed at Carswell AFB and I was a teenager. Jack and I both belonged to the JACs (Junior Aero Club) hosted by Bill and Betty Bell. He flew with a great bunch of folks around the Dallas-Fort Worth area and was a real mentor to the Juniors and Seniors in training. Jack was an excellent builder and true craftsman with Japanese tissue. His main events were AMA and Nostalgia gas, although he flew several glider classes and Jetex. As a young single airman, he lived on the wild side which resulted in a rather serious injury. While water skiing on Lake Worth after a few "refreshments" he skied into a pier and broke his jaw in several places. At the 1964 Dallas Nats Jack handed me a pair of miniature wire cutters and told me that if he started vomiting, that I was to cut his jaw wires (unforgettable). After I left the Fort Worth area, I lost track of Jack until the late 1980s.

Jack retired in Little Rock and opened a custom closet business (The Closet Factory). He had married the love of his life, Jean in 1976 and she became his flying partner. We reconnected in the late '80s when Julie and I were living in San Antonio and I flew with the Tri-City Fliers in Seguin. Jack flew all over Texas and especially at Seguin. When Julie and I moved to Houston, he and Jean would spend the night at our house coming and going to those contests. When Julie and I started going to the Nats together we always spent a night or two on our return trip to Texas at their house in Little Rock (2019 was the last time). In 1998, Julie and her Mom spent a week on Lake Hamilton and Jack and Jean came out and stayed with them for a couple of days. Then they all went to Little Rock for a couple of days. Julie's Mom always remembered that time spent with them fondly. One summer, we spent a week "fishing" on the White River with them in northwest Arkansas. A good time for all of us. We will deeply miss our frequent visits,

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FROM THE PRESIDENT

By the time this issue reaches you, a decision on the Outdoor NATs being held this year will most likely have already been made. So, are we going to have a NATS this year or not? I honestly don't know myself!

We were forced to cancel the 2020 Indoor NATs. Several of the other SIG's have already cancelled their NATS. At best, I think we can assume that IF we have an Outdoor FF NATs at all this year, it will be different. Many of you have reached out to me directly to weigh in with your opinions:

we should definitely HAVE a NATs because "X".

we should definitely NOT have a NATs because "Y"

While I don't know at this moment what the decision will be, or the datapoint that tips the balance one way or another, I want you to understand that your opinions were heard and I certainly appreciate the input. I recognize that whether you are in a highly impacted area of the country or not, everyone is anxious to get out and fly. We are working extremely hard to make sure you have those opportunities as soon as it is safe to do so.

This COVID-19 pandemic has certainly made me reflect on life in general and the hobby specifically. Since I was already retired, the employment disruption and stay-at-home policies didn't have a huge impact on daily life for me specifically, but I certainly recognize that it is a huge stressor on those that have been impacted directly. Many of my friends are simply going MAD having to be "locked up" in their own house with nothing to do. What has been very heartening to see is modelers retreating to their hobby to pass the time and distract themselves. Social media is filled with pictures of "quarantine builds". The indoor FF community has been running a "living room postal contest" since the beginning of March with people from all over the world participating… many of them the first indoor model they have ever built! At the beginning of May, NFFS started an outdoor postal contest so that people that had access to a local flying area or park could get out and FLY. Anecdotally at least, most of the cottage vendors in the industry seem to be selling well through this trying time... people are buying, building and flying!

I have been compelled over the last month to think of my dad a lot. Engineer that he was he would have been trying to break this pandemic down into its components. Trying to figure out how we stop an economic engine and then restart it and get it back in the air quickly… we spent many a night when I flew control line speed working out optimal ways to refuel and get back to the race. I would like to thank him for giving me this lifelong hobby. It has given me the skill to break things down to their individual parts and figure out the optimal way to put them together again… and it gave me a hobby that keeps me distracted and finding joy in building fun stuff while the world around me seems to be going insane. Thanks Dad!

You will soon be seeing the Symposium Patron letter and invitation to pre-order your Symposium. We are combining them this year to see if we can more accurately predict the necessary copies to print in the first run. I would like to encourage everyone to consider becoming a patron of this important annual journal of technical, theoretical, and historical material germane to the field of Free Flight model aviation. Our editor this year, Kit Bays, has assembled an amazing set of articles that are sure to provide you reference for years to come.

For those of you who haven't heard, Craig Greening agreed to step in and take over the NFFS Plans Service from Dave Gerspacher. I would like to thank Craig for stepping up and am excited to have him in the NFFS fold lending his time and enthusiasm. I would also like to take this opportunity to thank Dave Gerspacher from my heart for all his hard work over the time he has been handling this service for NFFS. We rely on the efforts of all our volunteers and it is important that we recognize and appreciate those that give of their time when they can. So Dave… I sincerely appreciate everything you have and continue to give to NFFS.. we are a better organization BECAUSE of your efforts.

Dave Lindley, Lisle, Ill.
NFFSPresident@freeflight.org

E-20 at the 2020 Nats

Come Fly **Come Watch**

Date: Tuesday, July 28
Time: Begins at 6 PM
Trophies to Fourth Place
Entry Fees: $5 per person

Contest Director:
Mike Schwartz
3406 N. Tweedbrook Pl.
Boise Id 83713
Cell: 208 891-9990
Satellite13@outlook.com

E-20 Power Kits and Timers
Contact: Bob Stalick
freefliter@aol.com
<Willamettemodelersclub.weebly.com>

See the NFFS website for the provisional rules for the E-20 Event

Sponsored by the NFFS and the Willamette Modelers Club of Oregon

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phone calls and close friendship with them.

Jean was four years older than Jack and they were inseparable. She was a secretary to Governor Winthrop Rockefeller and served as office manager for President Bill Clinton when he was associated with the law firm of Wright, Lindsey and Jennings. She did a great job of keeping Jack's "ducks in a row". One of the beautiful people inside and out! On the flying field she always volunteered to help and time for anyone in need.

Even in death they remained inseparable. Jean passed on May 14 and Jack four days later on May 18. Interment for both was at Arkansas State Veterans Cemetery on May 26. They will truly be missed by all.

—Julie and Faust Parker

GEORGE SARINOPOULOS

George Anest Sarinopoulos was born on August 3, 1932, in Fairfield, Alabama to Anest and Christina Sarinopoulos. He passed September 7, 2019 in Oklahoma City, at the age of 87. George graduated from Fairfield High School and was a proud graduate of Auburn University in 1954. He earned a Mechanical Engineering degree and throughout his career was employed by General Electric, Honeywell, Magnetic Peripherals, Control Data and Banctec with

over 40 years of continuous service. He was a member of the American Society of Engineers, Tau Beta Pi, Omicron Delta Kappa, Pi Tau Sigma, and Phi Kappa Tau. George served two years active duty as a First Lieutenant in the United States Air Force in Korea and was Honorably discharged. In 1963, he married the love of his life, Alice Zefferys, and relocated to Oklahoma City. George was a member of St. George Greek Orthodox Church serving as a Sunday School teacher for fifty years. In 2009, he received the Archdiocesan Medal of St. Paul award for his Sunday School service, which is the highest honor a lay person can receive from the Orthodox church. George loved his hobby of Free Flight model airplanes and was an active member of the Academy of Model Aeronautics since 1944, the Society of Antique Modelers and the National Free Flight Society. He also enjoyed restoring his 1929 Model A Roadster and being involved in the local Model A Club. George loved his family and church and touched so many people with his kindness. George is survived by his wife of 56 years, Alice, daughters Christina Kaltsounis (George), Victoria Wood (Guy) and son Mark Sarinopoulos (Alison). He was very proud of his grandchildren Theodore, Andrew, Guy Jr., Drew, Campbell and Cate. May his memory be Eternal. In lieu of flowers, donations can be made to St. George Greek Orthodox Church.

DICK PETERSON

Sadly, my uncle, Richard Peterson, passed away last night at 83. He had an infectious laugh, and had so many great, often hilarious, stories. I loved reminding him of stories I had heard dozens of times just to hear him retell them

and laugh again. He was artistic and creative, and always seemed to have several plans or ideas stirring in his head.

He loved music and had great stories about doing light shows in San Francisco in the late 1960s, and shooting arrows in the sky with Arthur Lee from Love. He didn't care for the Beatles trying to make rock and roll artsy, and told me he was blown away when he first heard Iggy and The Stooges "Raw Power". I thought it was hilarious when he went to see The Mars Volta when he was in his late 60s.

He gave thoughtful, unique gifts, including a fish "tank" for my crib. I've been told his beard terrified me when I was a baby, but I got over it eventually. I was inspired by his sense of adventure, curiosity, and love to travel. He was a great big brother to my dad, and a great uncle to my sister and me.

—John Peterson

Free Flight Schedule

2020 Outdoor Free Flight Nationals
NFFS United States Outdoor Championships
AMA International Aeromodelling Center, Muncie, Indiana
July 27-31, 2020
8:00 am – 5:00 pm Monday - Thursday
8:00 am - 4:00 pm Friday

Entry Deadline June 1, 2020 Late fee $50

AMA Official Events *(All events are Jr, Sr, Adult combined unless otherwise noted)*

Monday, July 27	Tuesday, July 28	Wednesday, July 29	Thursday, July 30	Friday, July 31
D Gas AB Classic Gas Payload Moffett F1A (J)(SA) Electric B	C Gas ROW Gas Mulvihill (J)(S)(A) F1C F1H (J)(SA) F1Q	B Gas 1/2A Classic Gas (J)(S)(A) Cargo HH Cat Glider (J)(S)(A) F1B F1J (J)(S)(A) E-36 Electric (J)(SA)	A Gas Dawn Unlimited HL Glider (J)(S)(A) F1G (J)(SA) F1P (J)(SA) Electric A	1/2A Gas (J)(S)(A) CD Classic Gas P-30 (J)(S)(A) F1S (J)(SA)

NFFS Events *(All events are Jr, Sr, Adult combined)*

Monday, July 27	Tuesday, July 28	Wednesday, July 29	Thursday, July 30	Friday, July 31
1/2A Nos Gas OT 020 Replica OT HL Glider Andrade Rubber (Small Mulvihill) ½ A Nos Payload** Golden Age 1/2A** **** Provisional event register on site only** Vintage FAI Pwr Fun Fly Monday evening (Tues. eve as reserve) **Mass Launches:** Monday Evening—Beat the Vartanian (12" Catapult Gliders) Tuesday Evening—E-20 (After trophy awards) Friday 7:00 am—E-36	A Nos Gas OT Catapult Jetex OT Rub Cab (lg & sm) NFFS 1-Design Combo (See NFFS website for complete list of eligible designs from previous years—only previous years' designs are eligible for this event—this year's designs are NOT eligible) <freeflight.org> ROW Rubber** HydroStar ROW** Nos Gas ROW** **** Provisional event register on site only**	B Nos Gas Small Nos Rubber (wing area 150 sq in or less) OT ABC Cabin NFFS Rubber 1-Design— Dyna-Moe (See Sept/Oct 2019 FF Digest for details) **FAC:** Jimmie Allen Dime Scale OT Rubber Stick Low-wing Mil. Trainer Mass Launch Hi-Start Scale Glider ***NFFS Banquet*** *The Carolina Room* *4805 N Wheeling Ave* *7 pm*	C Nos Gas OT ABC Pylon NFFS One Design— Hoosier Hotshot450/Texan (Legal .15 Nos Engine) Large Nos Rubber 1/2A E Nos **FAC:** Embryo Endurance Golden Age (Monoplanes & Biplanes Combined) OT Rubber Fuselage WW II Mass Launch Greve/Thompson Mass Launch Simplified Rubber Scale ***NFFS Cookout/Raffle 5:30 pm AMA Field behind White farm house or near Campgrounds***	¼ A Nos Gas Early 1/2A Nos Gas Super D VIT/Fixed (1000 Sq in wing min .60-.67 cid engine) OT Rub Stick (lg & sm) Classic Towline Pee Wee 30 ABC E Nos Hi-Start Glider** **FAC:** Modern Civilian Scale Rubber Scale Peanut Scale WW I Mass Launch Jet Catapult Scale Simplified Power Scale **** Provisional event register on site only**

Current AMA, FAI, FAC, and SAM rules apply.
HL Glider and Catapult Glider events will be flown from a pen.
Processing: AMA and NFFS – 7:00 am – 4:00 pm the day of the event;
Scale Judging Wednesday/Thursday Noon-5pm and Friday 8am-Noon
FAI - 30 minutes beginning one hour prior to first round
Late registration Notice: Entries will be accepted until noon the day of the event.

Contest Director:
Ed Carroll
Email: ec31133@aol.com
Phone: 818-489-5039

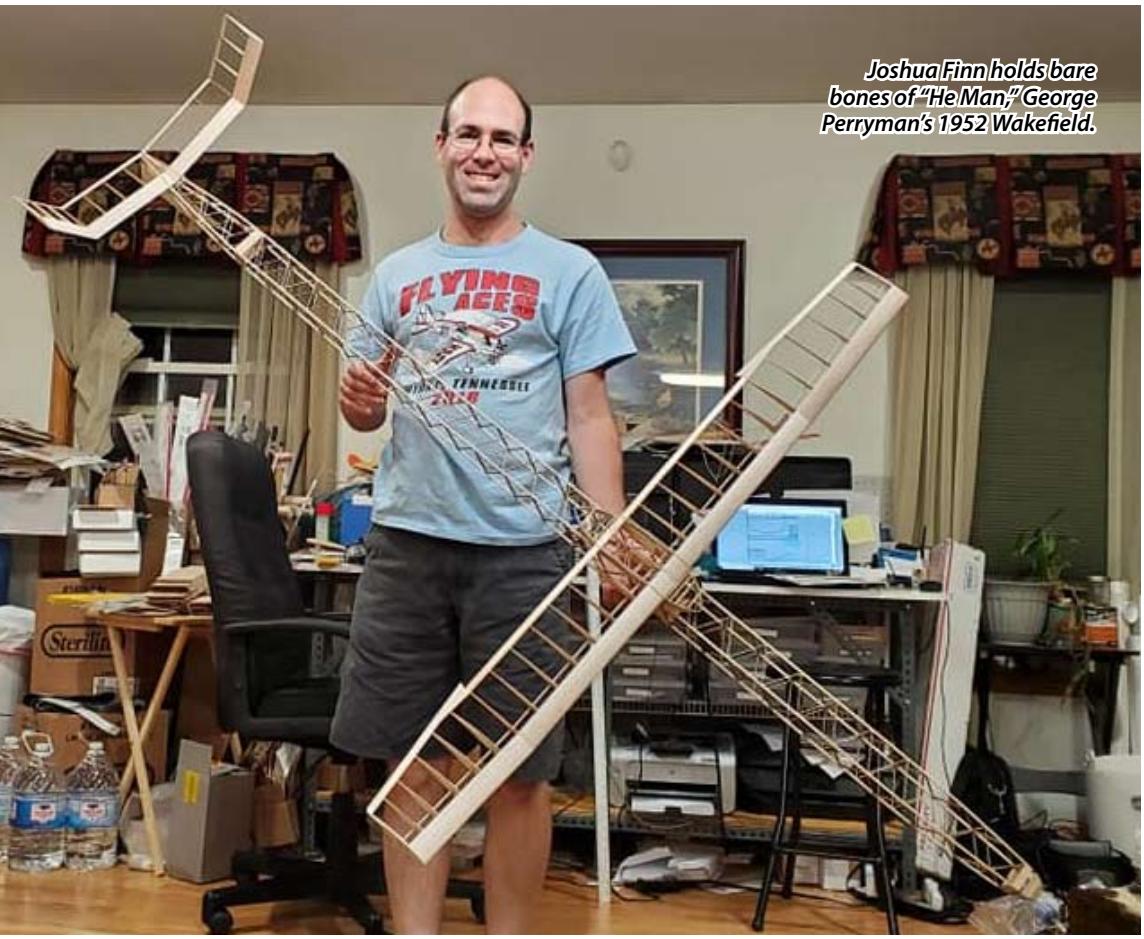
NFFS Category Championship Awards

All contestants are automatically entered for these awards
AMA Gas Champion – Events scored: ½A, A, B, C, D Gas, F1C, F1J, F1P
AMA Classic Gas Champion – Events Scored: ½A-CI, AB-CI, CD-CI
AMA Rubber Champion – Events scored: Moffett, Mulvihill, F1B, F1G, P-30
Glider Champion – Events scored: HL Glider, HH Catapult Glider, F1H, F1A, Classic Towline
Nostalgia Gas Champion – Events scored: ¼A, ½A, Early ½A, A, B, C Nostalgia Gas
Nostalgia Rubber Champion – Events scored: Small Nos Rubber, Large Nos Rubber
Jr. Hi Point and Sr. Hi Point Awards – F1A, Mulvihill, F1H, ½A Classic, Cat Glider, E-36, HLG, F1G, P30
Electric Champion – Electric A, Electric B, F1Q, E-36, F1S

In March, 2020 the NFFS Competitions Committee approved the Vintage Wakefield event for provisional status in the 2021-2022 NFFS rule book.

NFFS Vintage Wakefield will include designs published or kitted from 1951 through 1980. It is the brainchild of Bruce Hannah. Bruce's club, the Willamette Modelers Club of Oregon has been flying the event in local contests for over a year now, and interest is blossoming nationwide.

All of the classic 1950s Wakes such as those by Bilgri, Kothe, Foster, Reich and others are eligible. These "Era 1" Wakes will be limited to 80g rubber and will compete head to head with "Era 2" designs of 1957–1965 (50g rubber) and "Era 3" of 1966-1980 (40g rubber). Era 3 is when performance really started to increase through the use of variable incidence tails (VIT) and auto rudder (AR). Bruce Hannah explains the origins and philosophy of Vintage Wakefield:



Joshua Finn holds bare bones of "He Man," George Perryman's 1952 Wakefield.

"After the rise in popularity of Vintage FAI Power I thought it might be fun to do the same with Vintage Wakefield. One advantage is the overall weight and size of a Wake has not changed over the years. The early years had a cross section rule and a total model weight with rubber that where not separate, that meant that if you built light you could have more rubber. Well for ease of running a contest and writing rules we are going to give Era 1 a maximum motor weight of 80 grams and the airframe 150 grams. So if you want to fly with less rubber you will need to add weight the the airframe to fly with a minimum of 230 grams. This applies mostly to Era 1 as the other Eras will most likely use all rubber allowed.

"I see a ton of very cool Wakefields out there that most likely would never be built without an event like this. It is my hope that by having all the Eras fly together we can bring back some fun to the years gone by.

"I studied the times that each Era reported. Their dead air time was and found it surprising close. This is just a start on rules and we my find that they will need a few changes to make it fair but it must start somewhere."

Bruce also provided the following Q&A:

1) May I add auto surfaces? You may only use auto surfaces if they are on the original plans.

2) What type front end may I use? No variable pitch or delayed start allowed for any Era but any other type may be used like Montreal or reverse Montreal; this allows for Simpltorque or similar types to be used; also the original shown on plans or 3-view may be used.

3) May I use carbon? The use of carbon is relegated to only enforcement purposes. Carbon may not be a complete replacement of spruce or balsa. Trailing edges, spars, and tailbooms must still be built with the original material, but stiffeners may be added.

4) What type of covering can I use? Any type is okay.

5) Can I add or remove sheeting? If the model had a sheeted leading edge then it must stay that way. A small amount of added sheeting may be used as a stiffener or enforcement if needed.

6) Do I need to use the original prop? The prop must be the same diameter as original. This is in keeping with the same rule in Nostalgia Rubber as many Era 1 Vintage Wakefields are also eligible for Large Nostalgia Rubber. So if your Nostalgia model was a Wake back in the day and is up to weight it can be flown in Era 1. Now here are the Era breakdowns:

	Published Date	Airframe (min.)	Rubber (max.)
Era 1	1951–1956	150g	80g
Era 2	1957–1965	180g	50g
Era 3	1966–1980	180g	40g

OFFICIAL RULES - VINTAGE WAKEFIELD RUBBER

1. Design Eligibility *The period of eligibility for Vintage Wakefield Rubber designs shall be from January, 1, 1951 through December, 31, 1980. To be eligible to compete in Vintage Wakefield, a model must have been designed and the original plans published or otherwise verified by the contestant to have been drawn and used for construction and flight during the Vintage period. Multiple versions of a model design are permitted, providing the above criteria are met with each design modification. Authentication of model designs as eligible for Vintage Wakefield competitions shall be the responsibility of the contestant.*

2. Events *There shall be three Eras within the combined Vintage Wakefield, all of which fly together in single event.*

3. Contest Processing *The name of the model design(s), the designer(s), and the era(s) of at least one model shall be declared at initial registration.*

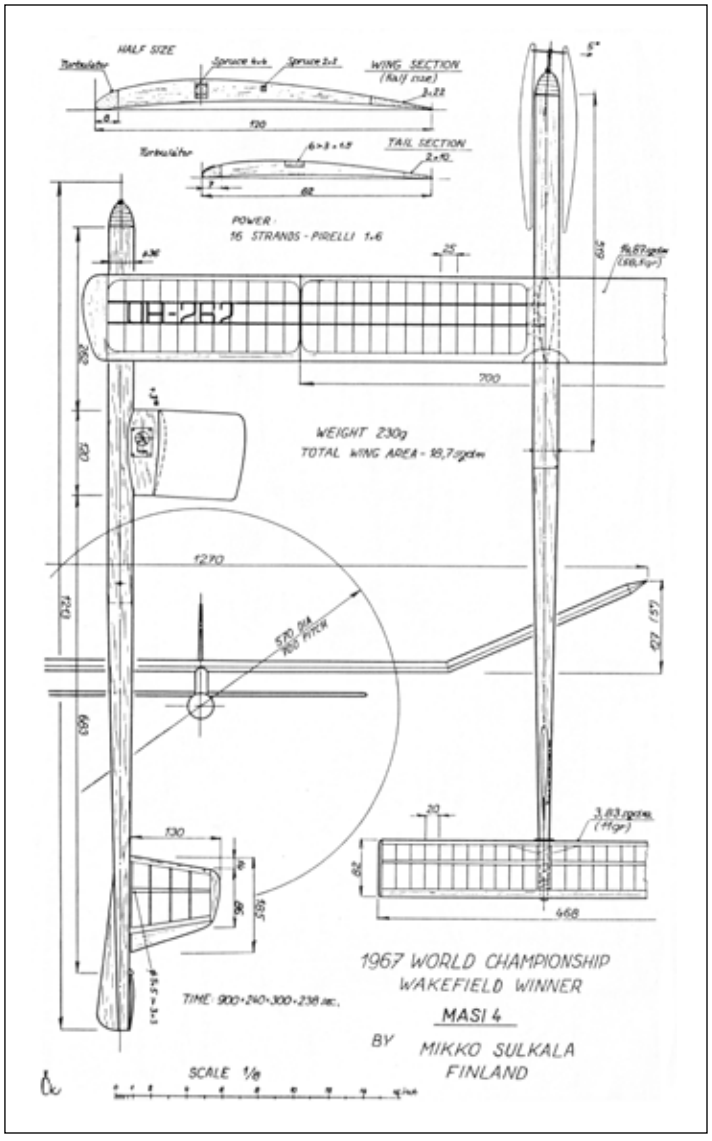
4. Number of Models *Contestants shall be allowed a maximum of two models. At least one of the two models shall*

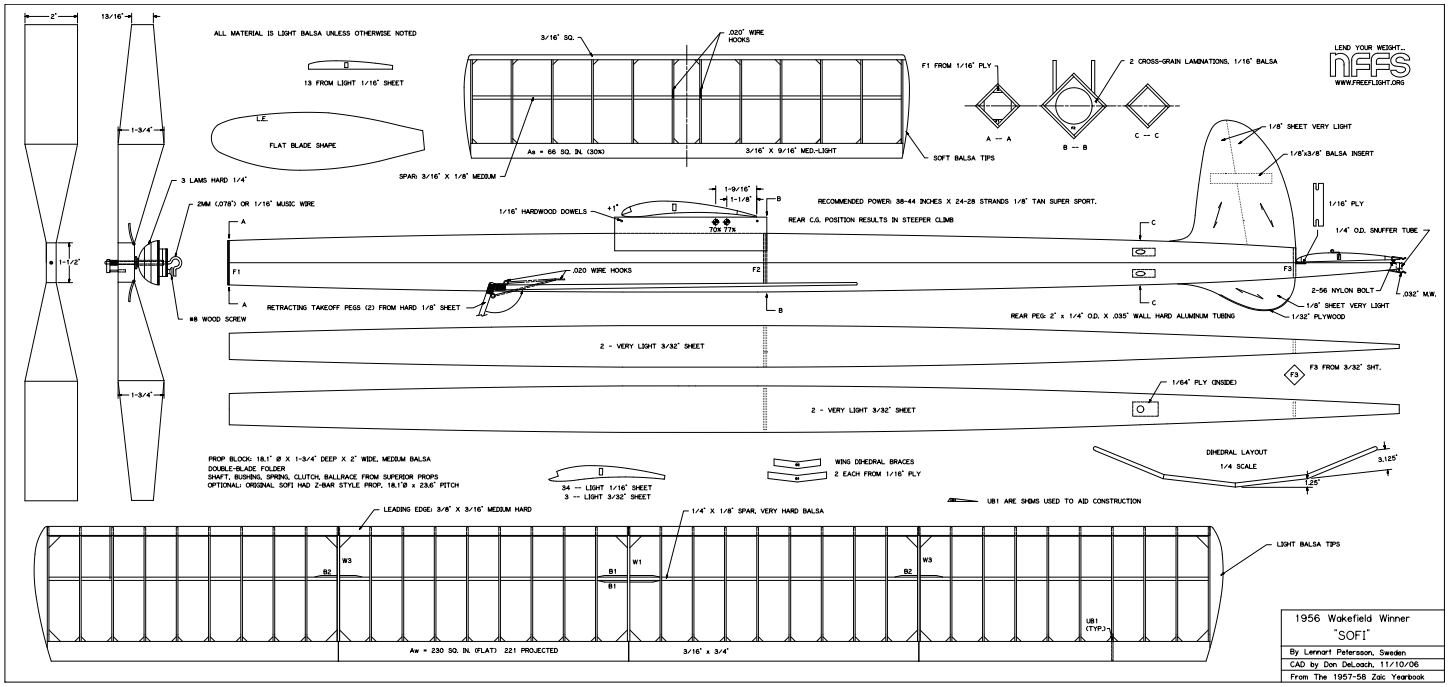
NFFS FULL-SIZED PLANS - VINTAGE WAKEFIELD RUBBER

Design	Year	Era	Designer	NFFS #
Elgin	1951	1	J. Elgin	P-234
X-5	1953	1	E. Scotto	P-962
Super Cloud	1953	1	H. Struck	P-805
Bostonian	1953	1	E. Dolby	P-965
World Champ	1953	1	J. Foster	P-958
Rubar II	1956	1	R. Matthews	P-814
Russkie	1956	1	W. Pullen	P-964
O-High-O	1959	2	G. Reich	P-963
Pandora	1960	2	G.L. Roberts	P-967
Cayuse	1961	2	F. Newquist	P-971
Max Maker	1961	2	G. Reich	P-73
L-8 – W. Champ	1963	2	J. Loffler	P-959
Belly Dancer	1964	2	G. Xenakis	P-970
Mirage	1964	2	R. Simpson	P-968
Grabber	1965	2	R. Simpson	P-974
Nor'wester	1966	2	R. Duffield	P-122
WydaWake	1968	3	F. Monts	P-966
Tart VIT	1971	3	G. Xenakis	P-56
Humble Duster	1972	3	R. Gregory	P-272
Charisma	1973	3	F. Parmenter	P-230
Tilka	1973	3	B. Eimar	P-64
Vol Libre 8	1973	3	R. White	P-80
Groovy Tuna	1974	3	J. Davis	P-969
Brand X	1978	3	J. Brown	P-209
Wake-Up	1979	3	G. Schroedeter	P-960
Waltzing Matilda	1979	3	J.P. Van Leuven	P-961
Santa Maria	1980	3	J. P. Van Leuven	P-975

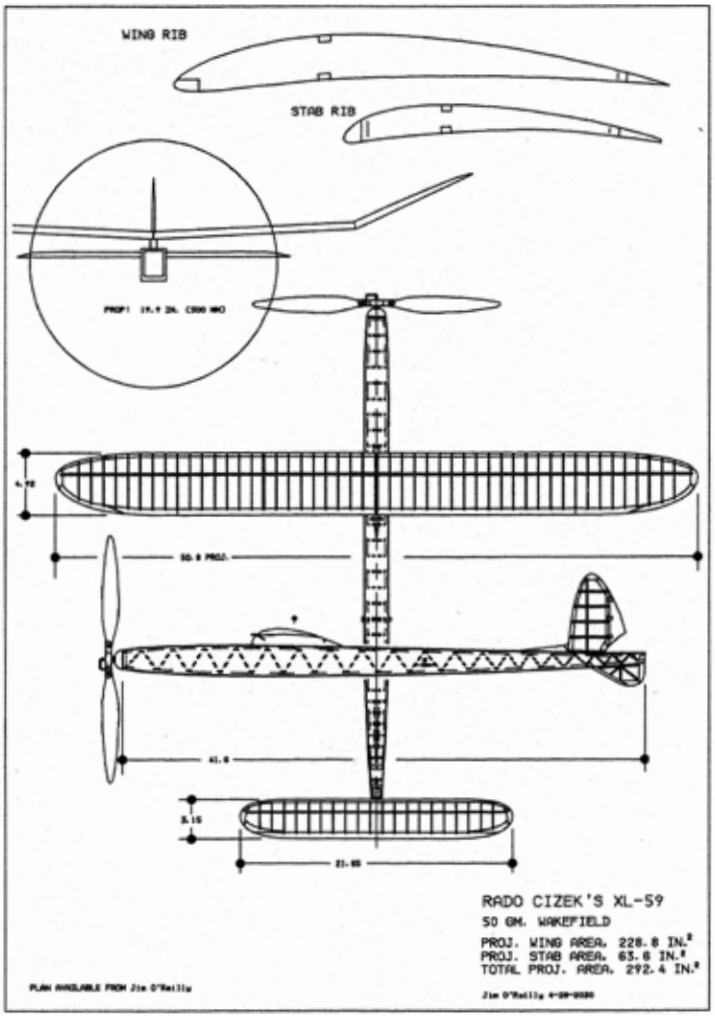
Order the Vintage Wakefield plans above for $8 each plus shipping from NFFS Plans Service. Online ordering at <www.freeflight.org> or mail checks (payable to NFFS) to 2302 Robin Rd. Mahomet, IL 61853. <servoframes@gmail.com> or 872-203-0377.

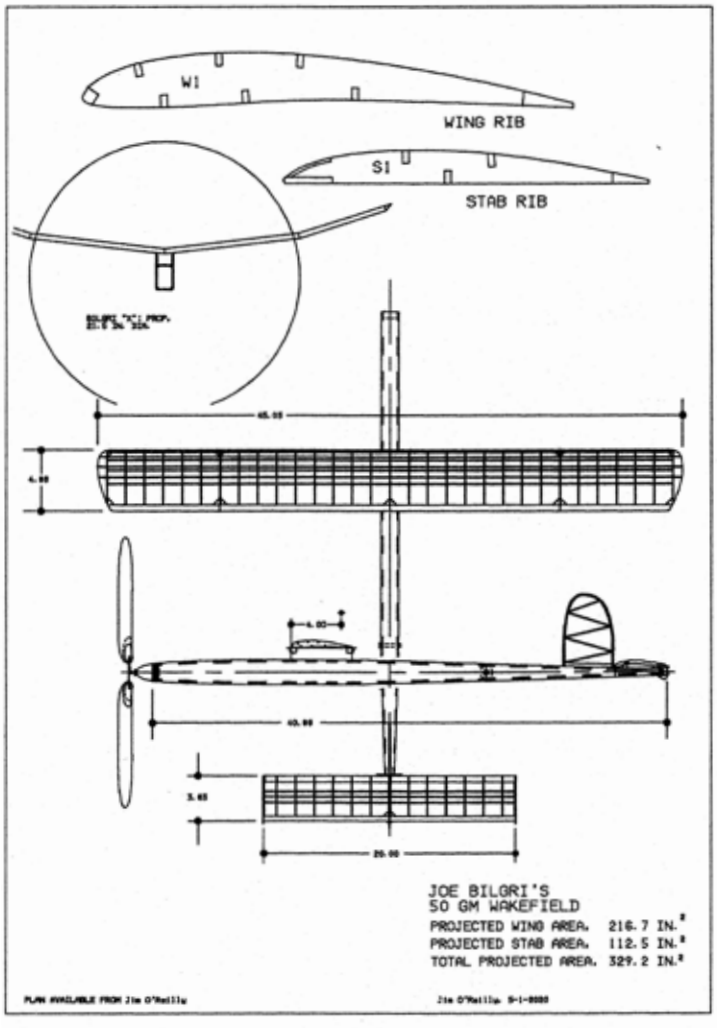
Distinctive 1956 Wakefield of E. Haimalainen, Finland.

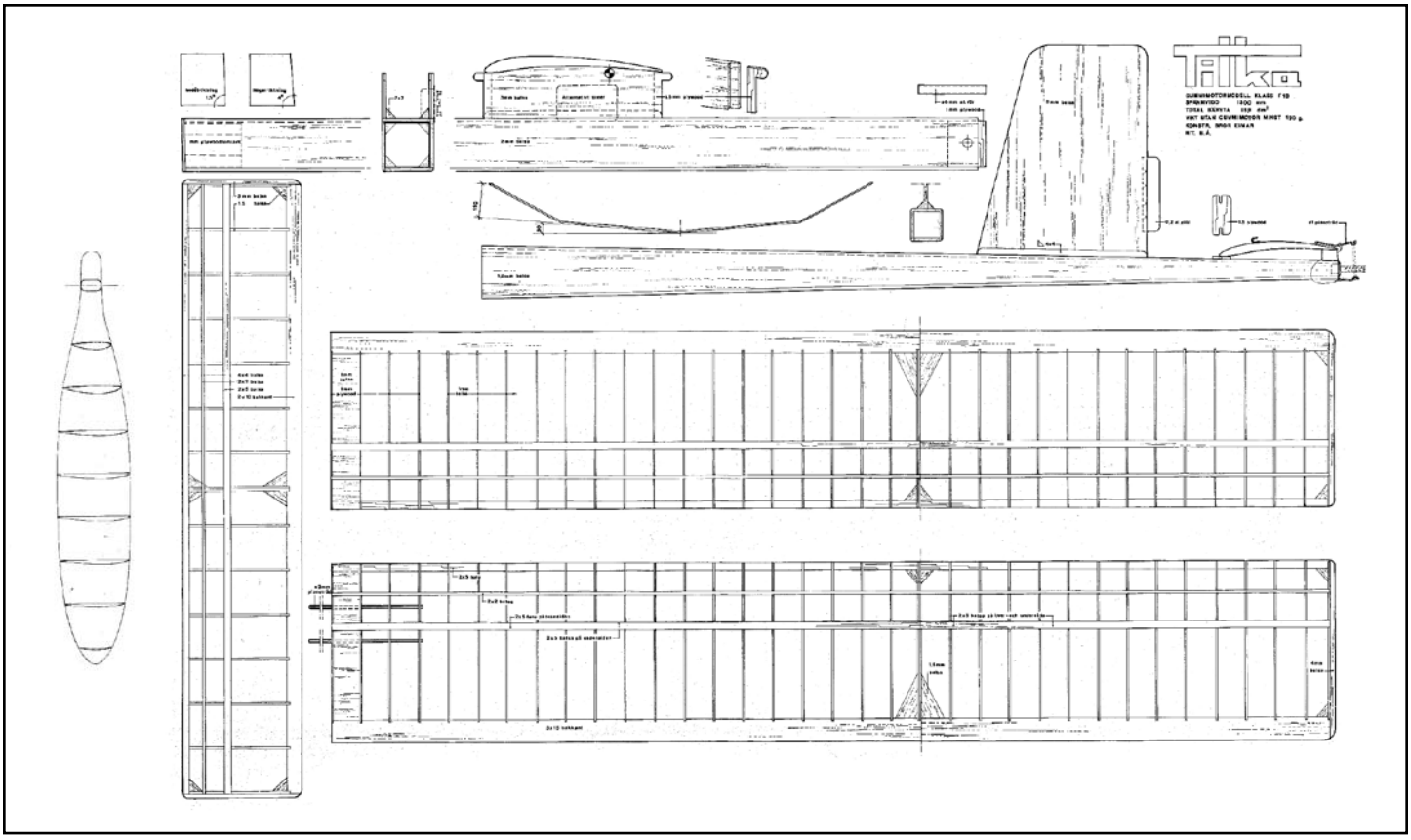


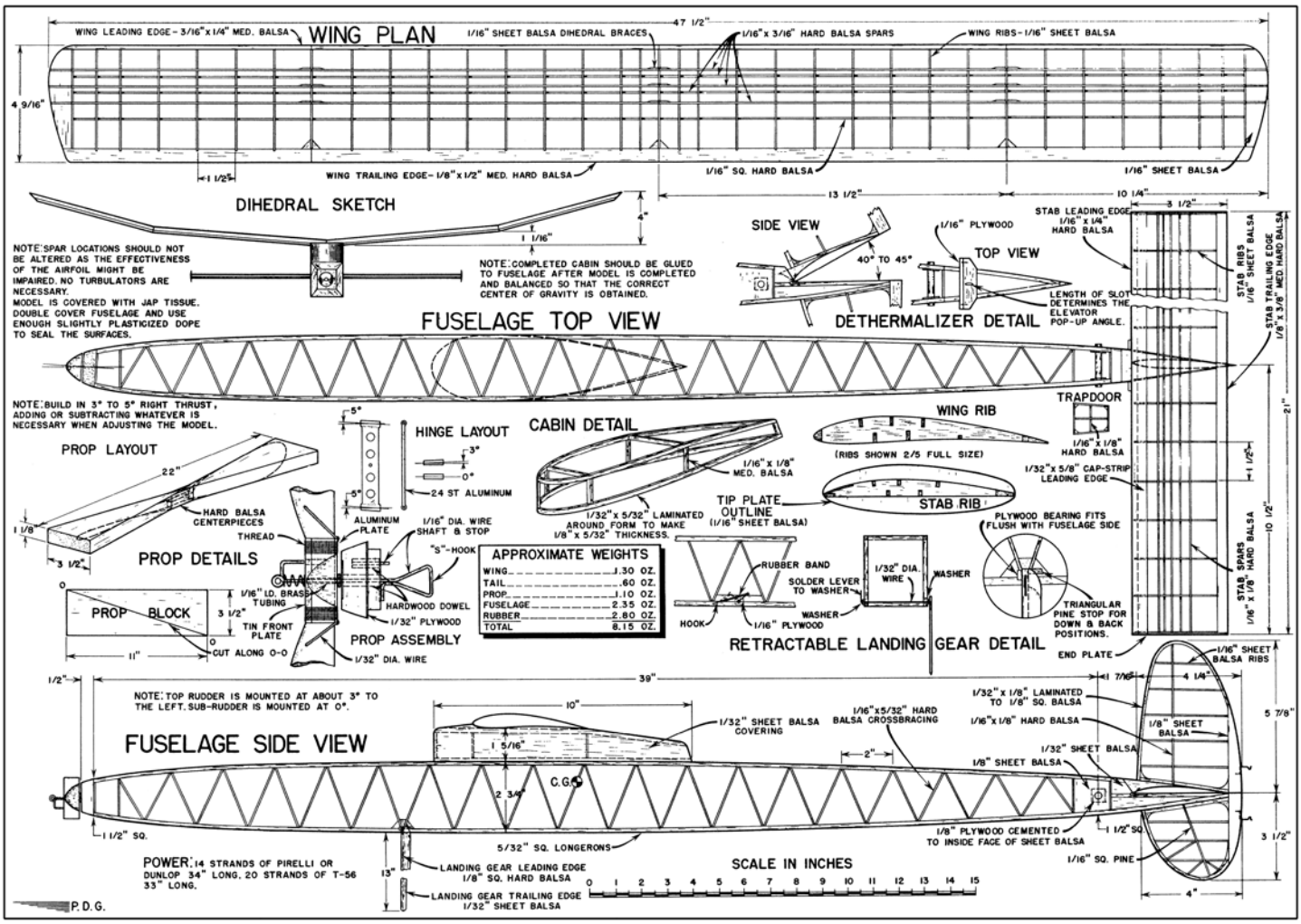


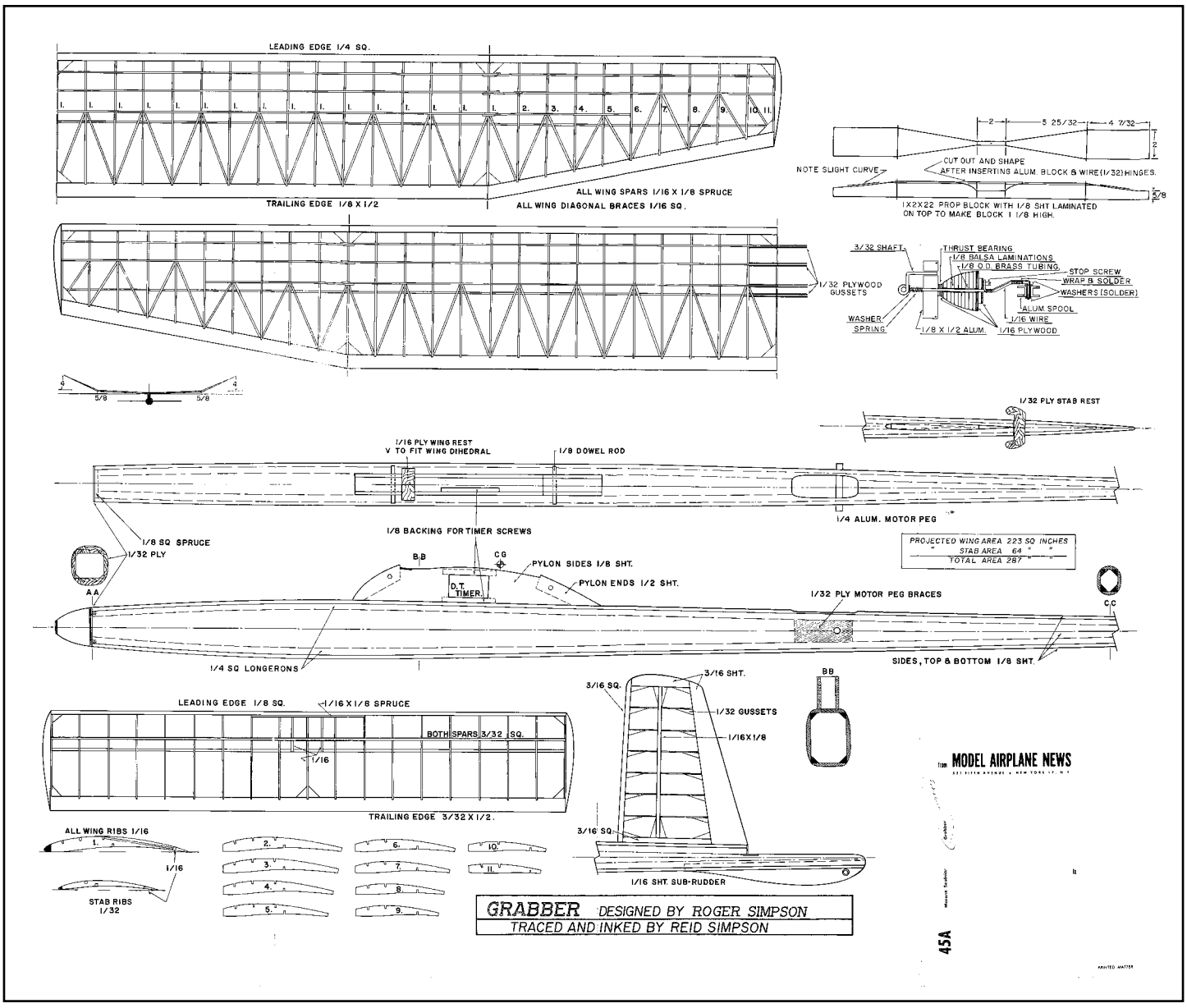
VINTAGE WAKEFIELD SHOWCASE

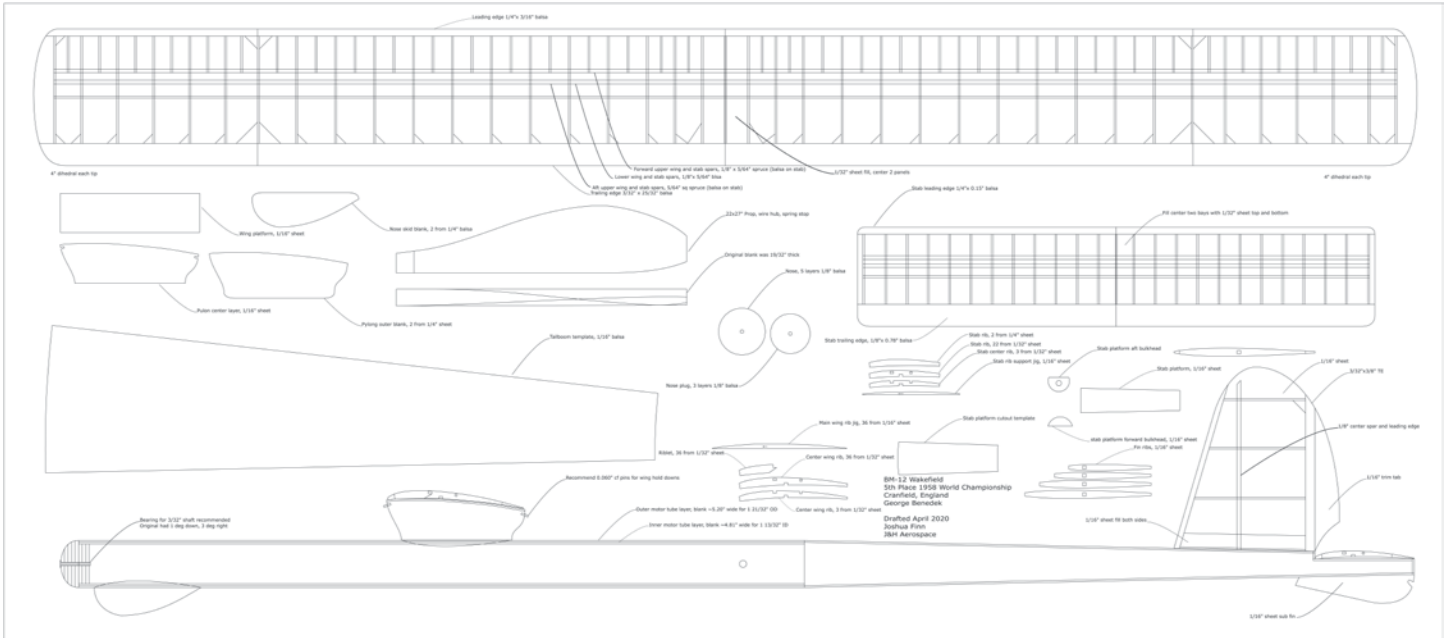


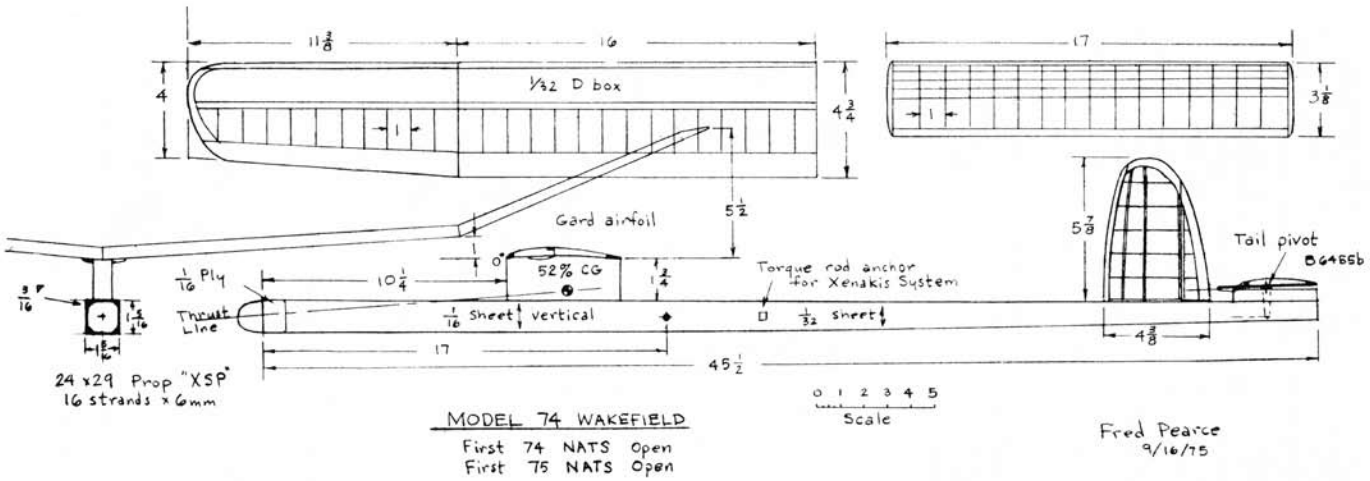




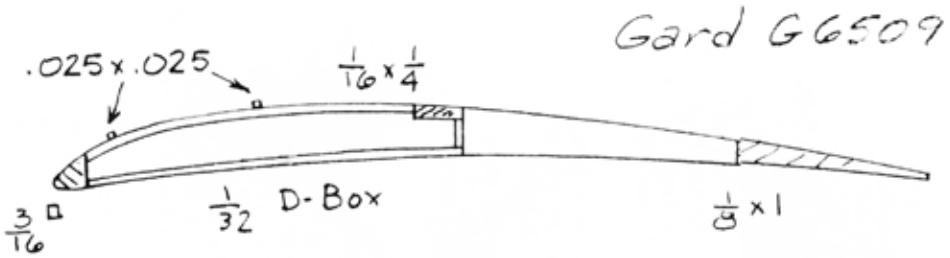

WING PLAN
WING LEADING EDGE - 3/16" x 1/4" MED. BALSA
1/16" SHEET BALSA DIHEDRAL BRACES
47 1/2"
1/16" x 3/16" HARD BALSA SPARS
WING RIBS - 1/16" SHEET BALSA
4 9/16"
1 1/2"
WING TRAILING EDGE - 1/8" x 1/2" MED. HARD BALSA
1/16" SQ. HARD BALSA
1/16" SHEET BALSA
13 1/2"
10 1/4"
DIHEDRAL SKETCH
1 1/16"
4"
NOTE: SPAR LOCATIONS SHOULD NOT BE ALTERED AS THE EFFECTIVENESS OF THE AIRFOIL MIGHT BE IMPAIRED. NO TURBULATORS ARE NECESSARY.
MODEL IS COVERED WITH JAP TISSUE. DOUBLE COVER FUSELAGE AND USE ENOUGH SLIGHTLY PLASTICIZED DOPE TO SEAL THE SURFACES.
NOTE: COMPLETED CABIN SHOULD BE GLUED TO FUSELAGE AFTER MODEL IS COMPLETED AND BALANCED SO THAT THE CORRECT CENTER OF GRAVITY IS OBTAINED.
SIDE VIEW
40° TO 45°
1/16" PLYWOOD
TOP VIEW
DETHERMALIZER DETAIL
LENGTH OF SLOT DETERMINES THE ELEVATOR POP-UP ANGLE.
STAB LEADING EDGE 1/16" x 1/4" HARD BALSA
3 1/2"
STAB RIBS 1/16" SHEET BALSA
STAB TRAILING EDGE 1/8" x 3/8" MED. HARD BALSA
FUSELAGE TOP VIEW
21"
NOTE: BUILD IN 3° TO 5° RIGHT THRUST, ADDING OR SUBTRACTING WHATEVER IS NECESSARY WHEN ADJUSTING THE MODEL.
TRAPDOOR
WING RIB
(RIBS SHOWN 2/5 FULL SIZE)
1/16" x 1/8" HARD BALSA
1/32" x 5/8" CAP-STRIP LEADING EDGE
1 1/2"
10 1/2"
PROP LAYOUT
22"
1 1/8"
3 1/2"
HARD BALSA CENTERPIECES
THREAD
PROP DETAILS
5°
HINGE LAYOUT
3°
0°
5°
24 ST ALUMINUM
ALUMINUM PLATE
1/16" DIA. WIRE SHAFT & STOP
"S"-HOOK
CABIN DETAIL
1/16" x 1/8" MED. BALSA
1/32" x 5/32" LAMINATED AROUND FORM TO MAKE 1/8" x 5/32" THICKNESS.
TIP PLATE OUTLINE (1/16" SHEET BALSA)
STAB RIB
PLYWOOD BEARING FITS FLUSH WITH FUSELAGE SIDE
APPROXIMATE WEIGHTS
WING ..... 1.30 OZ.
TAIL ..... .60 OZ.
PROP. ..... 1.10 OZ.
FUSELAGE ..... 2.35 OZ.
RUBBER ..... 2.80 OZ.
TOTAL ..... 8.15 OZ.
PROP BLOCK
3 1/2"
1/16" I.D. BRASS TUBING
TIN FRONT PLATE
11"
CUT ALONG O-O
HARDWOOD DOWEL
1/32" PLYWOOD
PROP ASSEMBLY
1/32" DIA. WIRE
RUBBER BAND
SOLDER LEVER TO WASHER
1/32" DIA. WIRE
WASHER
HOOK
1/16" PLYWOOD
WASHER
RETRACTABLE LANDING GEAR DETAIL
TRIANGULAR PINE STOP FOR DOWN & BACK POSITIONS.
END PLATE
1/16" SHEET BALSA RIBS
STAB SPARS 1/16" x 1/8" HARD BALSA
1/2"
39"
7/16"
4 1/4"
NOTE: TOP RUDDER IS MOUNTED AT ABOUT 3° TO THE LEFT. SUB-RUDDER IS MOUNTED AT 0°.
10"
1/32" SHEET BALSA COVERING
1/16" x 5/32" HARD BALSA CROSSBRACING
1/32" x 1/8" LAMINATED TO 1/8" SQ. BALSA
1/16" x 1/8" HARD BALSA
1/8" SHEET BALSA
1/32" SHEET BALSA
1/8" SHEET BALSA
5 7/8"
FUSELAGE SIDE VIEW
1 5/16"
2"
2 3/4"
C.G.
1 1/2" SQ.
5/32" SQ. LONGERONS
1/8" PLYWOOD CEMENTED TO INSIDE FACE OF SHEET BALSA
1 1/2" SQ.
3 1/2"
1/16" SQ. PINE
4"
POWER: 14 STRANDS OF PIRELLI OR DUNLOP 34" LONG, 20 STRANDS OF T-56 33" LONG.
13"
LANDING GEAR LEADING EDGE 1/8" SQ. HARD BALSA
LANDING GEAR TRAILING EDGE 1/32" SHEET BALSA
SCALE IN INCHES
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
P. D. G.

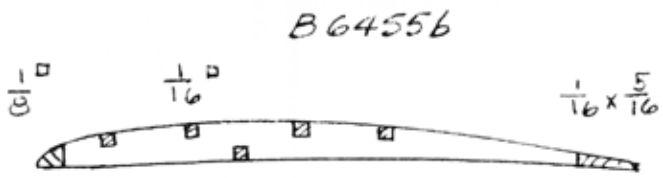

LEADING EDGE 1/4 SQ.
TRAILING EDGE 1/8 X 1/2
ALL WING SPARS 1/16 X 1/8 SPRUCE
ALL WING DIAGONAL BRACES 1/16 SQ.
NOTE SLIGHT CURVE
CUT OUT AND SHAPE
AFTER INSERTING ALUM. BLOCK & WIRE (1/32) HINGES.
1X2X22 PROP BLOCK WITH 1/8 SHT LAMINATED
ON TOP TO MAKE BLOCK 1 1/8 HIGH.
1/32 PLYWOOD
GUSSETS
3/32 SHAFT
THRUST BEARING
1/8 BALSA LAMINATIONS
1/8 O.D. BRASS TUBING
STOP SCREW
WRAP & SOLDER
WASHERS (SOLDER)
ALUM. SPOOL
1/16 WIRE
1/16 PLYWOOD
1/8 X 1/2 ALUM.
WASHER
SPRING
1/32 PLY STAB REST
1/16 PLY WING REST
V TO FIT WING DIHEDRAL
1/8 DOWEL ROD
1/4 ALUM. MOTOR PEG
1/8 BACKING FOR TIMER SCREWS
1/8 SQ SPRUCE
1/32 PLY
PROJECTED WING AREA 223 SQ INCHES
STAB AREA 64
TOTAL AREA 287
PYLON SIDES 1/8 SHT.
PYLON ENDS 1/2 SHT.
D.T. TIMER.
1/32 PLY MOTOR PEG BRACES
1/4 SQ LONGERONS
SIDES, TOP & BOTTOM 1/8 SHT.
LEADING EDGE 1/8 SQ.
1/16 X 1/8 SPRUCE
BOTH SPARS 3/32 SQ.
TRAILING EDGE 3/32 X 1/2.
3/16 SHT.
3/16 SQ.
1/32 GUSSETS
1/16 X 1/8
1/16 SHT. SUB-RUDDER
ALL WING RIBS 1/16
STAB RIBS 1/32
GRABBER DESIGNED BY ROGER SIMPSON
TRACED AND INKED BY REID SIMPSON
from MODEL AIRPLANE NEWS
45A

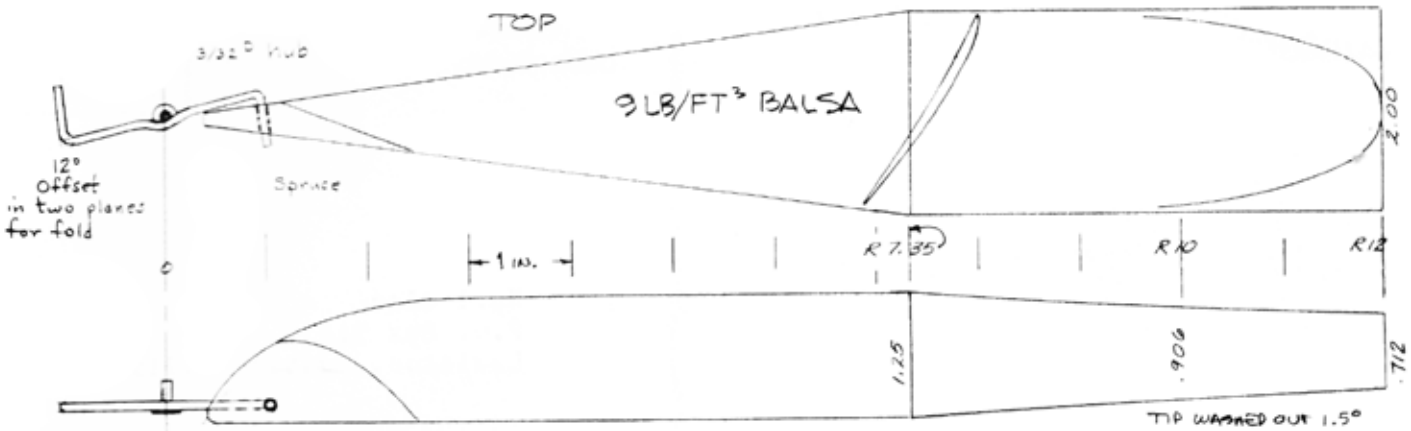

BM-12 Wakefield
5th Place 1958 World Championship
Cranfield, England
George Benedek
Drafted April 2020
Joshua Finn
J&H Aerospace



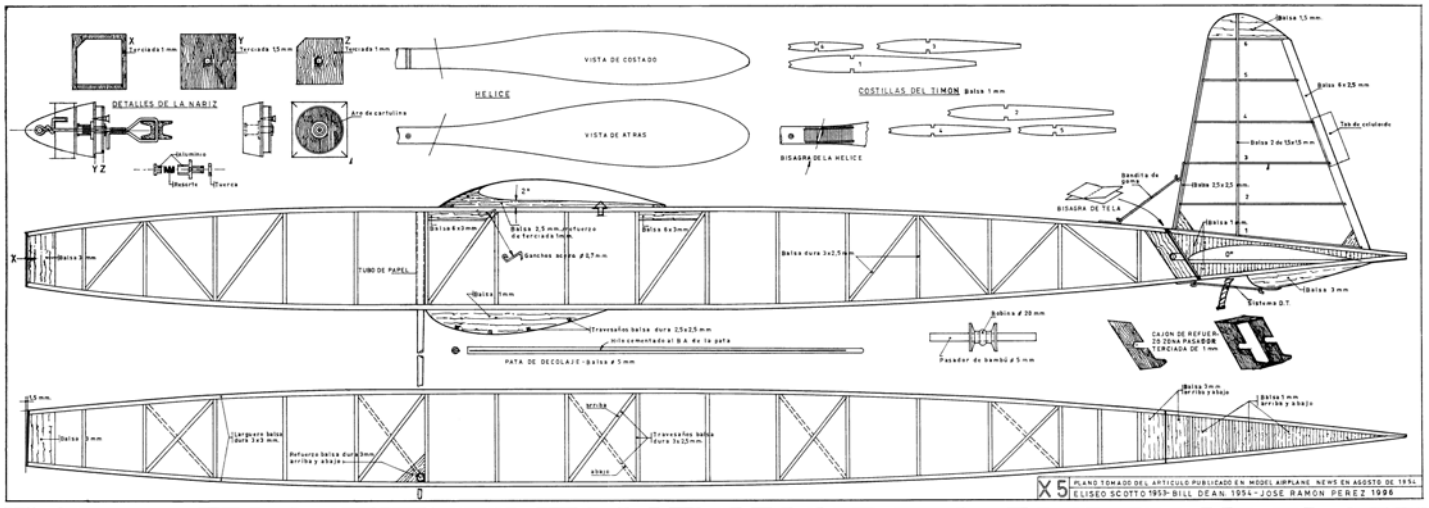
FRED PEARCE'S NATS WINNER

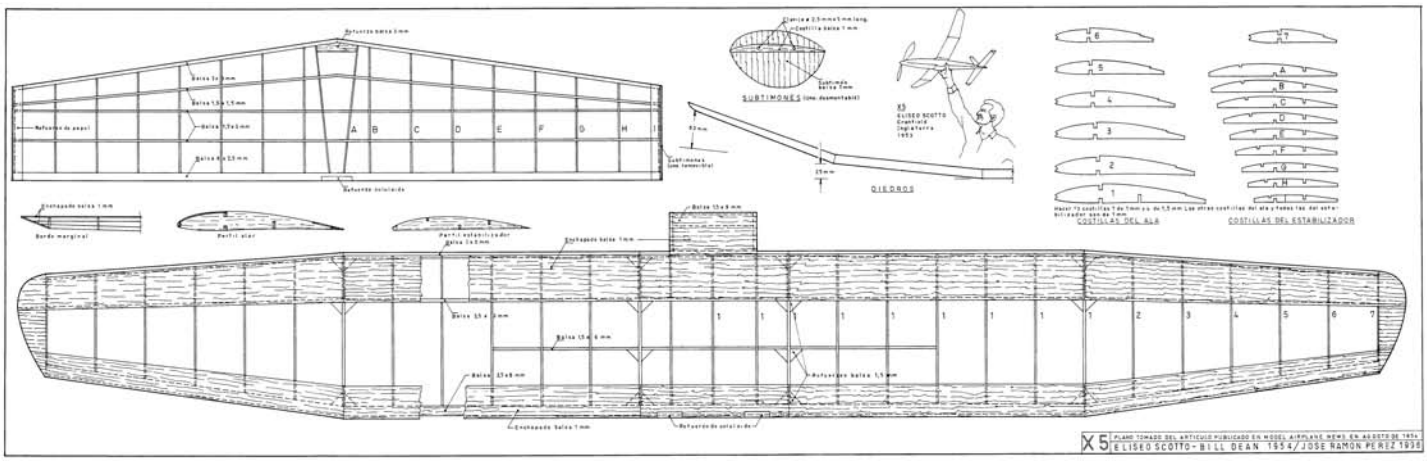


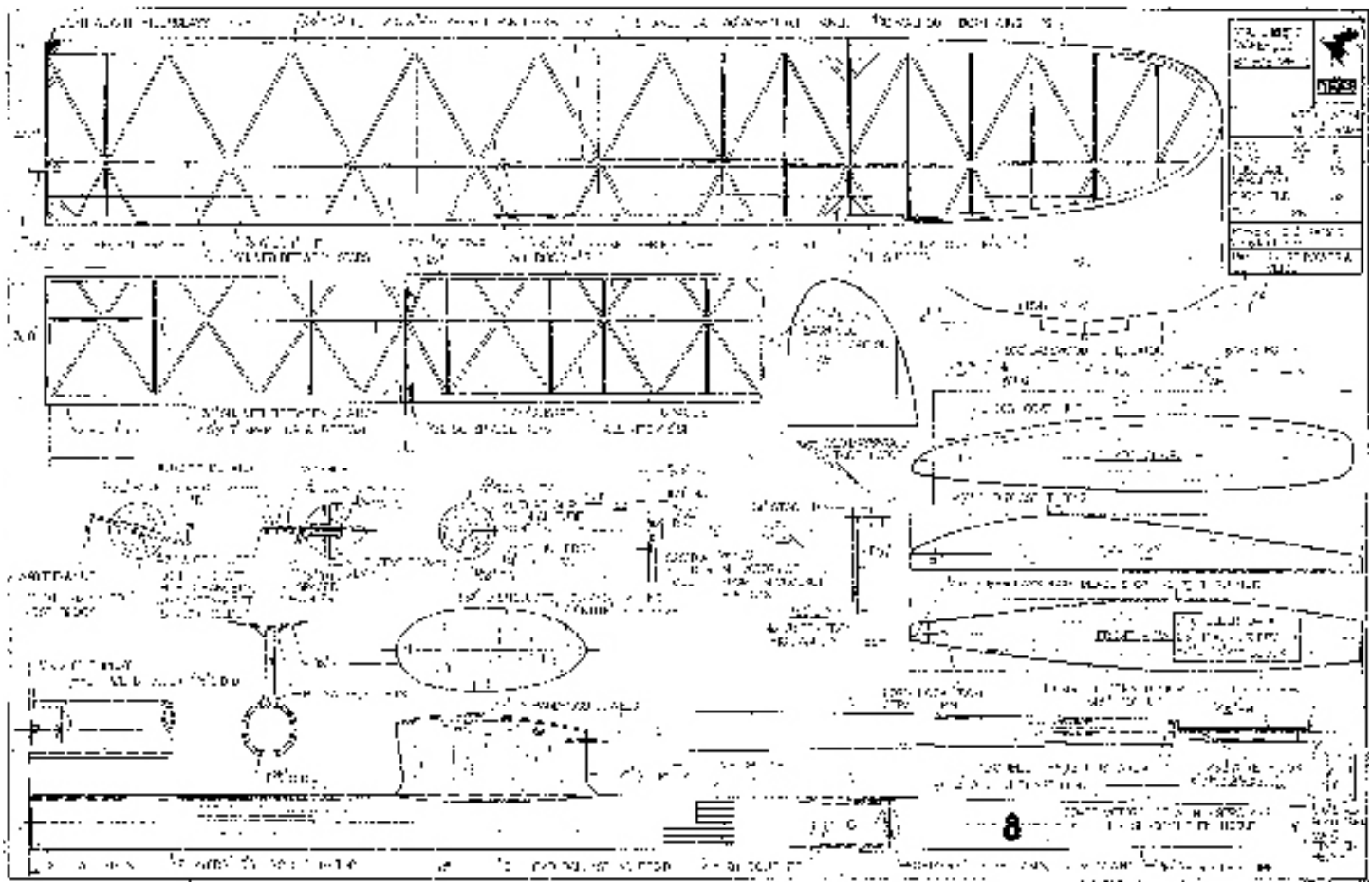


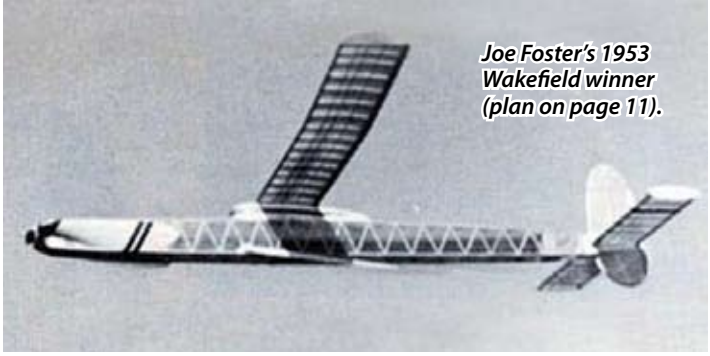


FRED PEARCE'S "XSP" PROP, WAKE & UNLIM., 24D×29P


DETALLES DE LA NARIZ
HELICE
VISTA DE COSTADO
VISTA DE ATRAS
COSTILLAS DEL TIMON
BISAGRA DE LA HELICE
BISAGRA DE TELA
TUBO DE PAPEL
PATA DE DESCOLAJE
Pasador de bambú ø 5 mm
CAJON DE REFUERZO
X5 PLANO TOMADO DEL ARTICULO PUBLICADO EN MODEL AIRPLANE NEWS EN AGOSTO DE 1954.
ELISEO SCOTTO 1953- BILL DEAN 1954- JOSE RAMON PEREZ 1996


SUBTIMONES
DIEDROS
COSTILLAS DEL ALA
COSTILLAS DEL ESTABILIZADOR
X5 PLANO TOMADO DEL ARTICULO PUBLICADO EN MODEL AIRPLANE NEWS EN AGOSTO DE 1954.
ELISEO SCOTTO - BILL DEAN 1954 / JOSE RAMON PEREZ 1938





Joe Foster's 1953 Wakefield winner (plan on page 11).

Georges Benedek's sleek "BM-12", available as a short kit from J&H Aerospace.

be declared before attempting an Official flight. The second model may be declared after initial registration but must be declared before making any flight attempt with that model.

5. Scaling *Scaling up or down of model parameters or components for Vintage Wakefield Rubber shall not be allowed.*

6. Construction *The flying surfaces, dihedral angles and airfoils shall be the same as the original design. If the model had a sheeted leading edge then it must stay that way. A small amount of added sheeting can be used as a stiffener or reinforcement if needed. The use of carbon is permitted only for enforcement purposes; it cannot be a complete replacement of spruce or balsa. Trailing edges, leading edges, spars and tailbooms must be built with the plan-specified material, but stiffeners may be added. Motor tubes may be made of any material, but must be the plan-specified outside diameter and length. Variable incidence surfaces may only be used if shown on the original plan. A design may be modified to allow for a blast tube and a dethermalizer system. Any retractable landing gear or takeoff skid shown on the plans may be omitted.*

Plans and Kits - VINTAGE WAKEFIELD RUBBER

Design	Year	Era	Plan/short kit	Source
Lidgard	1952	1	$16/$31	O'Reilly
OhSoLong	1952	1	$21/$25	O'Reilly
All American	1952	1	$11/$19	O'Reilly
He-Man	1952	1	$10/$40	Finn
G. Reich	1953	1	$13/$31	O'Reilly
A. King WCh	1954	1	$13/$25	O'Reilly
Samman WCh	1955	1	$14/$31	O'Reilly
Kothe	1955	1	$8/$32	DeLoach
Bilgri	1955	1	$12/$31	O'Reilly
W 55/5	1955	1	$8/$30	DeLoach
Haimalainen	1956	1	$8/$32	DeLoach
Torontonian	1956	1	$12/$31	O'Reilly
Langley	1956	1	$13/$31	O'Reilly
Avenger	1956	1	$13/$31	O'Reilly
Sofi	1956	1	$8/$30	DeLoach
XL-56	1956	1	$13/31	O'Reilly
Benedek BM-12	1958	2	$10/$40	Finn
XL-59	1959	2	$13/31	O'Reilly
Skyscraper	1959	2	$13/31	O'Reilly
Michelle	1967	3	$15	Flying Models

Order the plans and short kits above from Jim O'Reilly, <jimoreillymodelplans.com>; Joshua Finn, <jhaerospace.com>; Don DeLoach <ddeloach@comcast.net>; Flying Models, <https://store.flying-models.com/>.

7. Propeller(s) *Propellers must be the same type as on the original model (freewheeler, single-bladed folder, double-bladed folder). Diameter shall be no greater shown on the plan. No variable pitch or delayed start allowed for any era but any other type can be used like Montreal or reverse Montreal; this allows for Simpletorque or similar hubs to be used. Also, the original prop hub shown on plans or 3-view may be used.*

8. Eras

Era 1 - Jan. 1, 1951 through Dec. 31, 1956 designs. Airframe minimum weight: 150 grams; lubricated rubber motor: 80 grams maximum.

Era 2 - Jan. 1, 1957 through Dec. 31, 1965 designs. Airframe minimum weight: 180 grams; lubricated rubber motor: 50 grams maximum.

Era 3 - Jan. 1, 1966 through Dec. 31, 1980 designs. Airframe minimum weight: 190 grams; lubricated rubber motor: 40 grams maximum.

9. Launch Requirements *All models may be hand launched. There is no ROG requirement (see* Construction *above).*

10. Official Flights and Scoring *The NFFS Nostalgia and General Rules and the AMA Competition Regulations apply to Vintage Wakefield unless otherwise noted. Maximum flight times shall be five official flights of 180 seconds. Contest Directors (CDs) are encouraged to fly the event in one-hour rounds with advance notice. CDs may shorten the official flight times to suit field and wind conditions. The final score is the total of the five official flights plus the recorded time of any fly-off flights for which the contestant becomes eligible by achieving maximum time in each of the five official flights.*

11. Fly-offs *Fly-off flight #1 shall be 240 seconds maximum. Fly-off flight #2 and subsequent flights shall be 300 seconds maximum, until the contestant fails to achieve the maximum. CDs may shorten fly-off flight maximums to suit wind and field conditions. With unanimous agreement of affected contestants, a single evening or morning fly-off flight with extended maximum may be held to determine a winner. Only one attempt is permitted for each fly-off flight. All official fly-off flights must be launched prior to the end of the contest as determined and signaled by the CD.*

A retired programmer/analyst,Rudy Kluiber was interested in airplanes from his earliest memories as a young boy. He built Strombecker solids with his father. By about age 10 he was flying Control Line and Free Flight models, but his modeling experience really blossomed when his family moved to Cleveland in the early 1950s. His first Nats was Dallas in 1956. The next year at Willow Grove he won 1/2A, A and Rocket in Senior, and had high time of the meet. Over the years he has flown just about all of the FF events including AMA, NFFS, SAM and FAC. He's been a CD since 1964 and on the FF Contest Board for 40 some years. In recent years besides competing each summer he and his wife Jeri have been busy putting on three meets at Muncie. He comments, "Free Flight is a great sport filled with great people."

Author with original two Honchos. Smaller model has 176 square inches, larger is 226. The 226 version was flown for number of years locked up with 10 degrees down thrust. A later version of the Honcho was converted to VIT/AR. This version was published in Model Aviation, *July 1980. All were originally tissue covered; re-covered with Mylar about thirty years ago, but never used after that.*

PHOTOGRAPHY: JERI AND RUDY KLUIBER, DON DELOACH

When I got out of the service in 1963 I had been flying Ramrod 250 designs for several years with reasonable success. Looking for Free Flight activity I started going up to Canada for contests—Toronto for the T&D and also Camp Borden. Some of the Canadian flyers were flying small rear-finned pylon models that featured really fast climbs. As the meets those dates began featuring shorter motor runs and maxes. That fast climb appealed to me and I finally decided to see what I could come up with.

I wanted something really small as a sort of proof of concept model. I sketched out a design at about 180 square inches. Now a little secret about 'designing'. I needed some paper to draw out the wing plan. Thought I would draw on the back of an existing plan. I came across a Strato Streak wing plan. As I looked at it, it occurred to me that if I just lopped off a couple of wing bays on each tip I would have what I needed. And so the Honcho wing layout was created. I fin-

Electric Honcho by Don DeLoach

The NFFS Golden Age 1/2A rules are flexible, allowing electric models to compete alongside glow-powered models. The rules only stipulate that LiPo battery voltage cannot exceed 2 cells (7.4V nominal), and any motor and prop may be used. The electric setup I employed on my Honcho is roughly equivalent to the power output of the Tee Dee and Holland Hornet .049s. –Ed.

Model weight: *5.7 ounces with battery.*

CG: *73%.*

Motor: *Cobra 2203/28 from <retroRC.us.com>.*

Battery: *Gaoneng GNB 7.4V HV 300 mAh 80C from <ebay.com>, or any 300-500 mAh 7.4V Lipo of at least 65C.*

Prop: *Graupner CAM 7.5x4 folder and hub from <texastimers.com>, or APC "E" props of 6-7" diameter by 4-6" pitch.*

Speed Controller: *Exceed RC Proton 12A or Cobra 11A from <retroRC.us.com>, or Castle Talon 15A.*

Timer: *Texas Timers adjustable E-timer (<texastimers.com>) or StarlinkFlitetech SLFT with RDT and custom "E36_ZIP" chip for Golden Age motor run times (9, 8, 7, 6, 5 and 4 seconds), from <starlink-flitetech.com>.*

RDT: *Airtek from Ken Bauer, <airtekee.wordpress.com>.*

Servo: *Any sub-micro 3.7g servo. Try RCtimer (<rctimer.com>).*

ished the model in late fall. I was alone at our testing site (when we actually had a local site) for the first test flights and glad because I really expected my little hot rod to do a quick wing over or barrel roll into the ground. Much to my delight the first flight was up into a nice right hand pattern. A few tweaks on the sub rudder and we were dialed in.

BUILD A 1967 HONCHO

Order the 1967 Honcho (P-957, $7) from NFFS Plans Service. Online ordering at <www.freeflight.org> or mail checks (payable to NFFS) to Craig Greening, 2302 Robin Rd. Mahomet, IL 61853. <servoframes@gmail.com> or 872-203-0377.

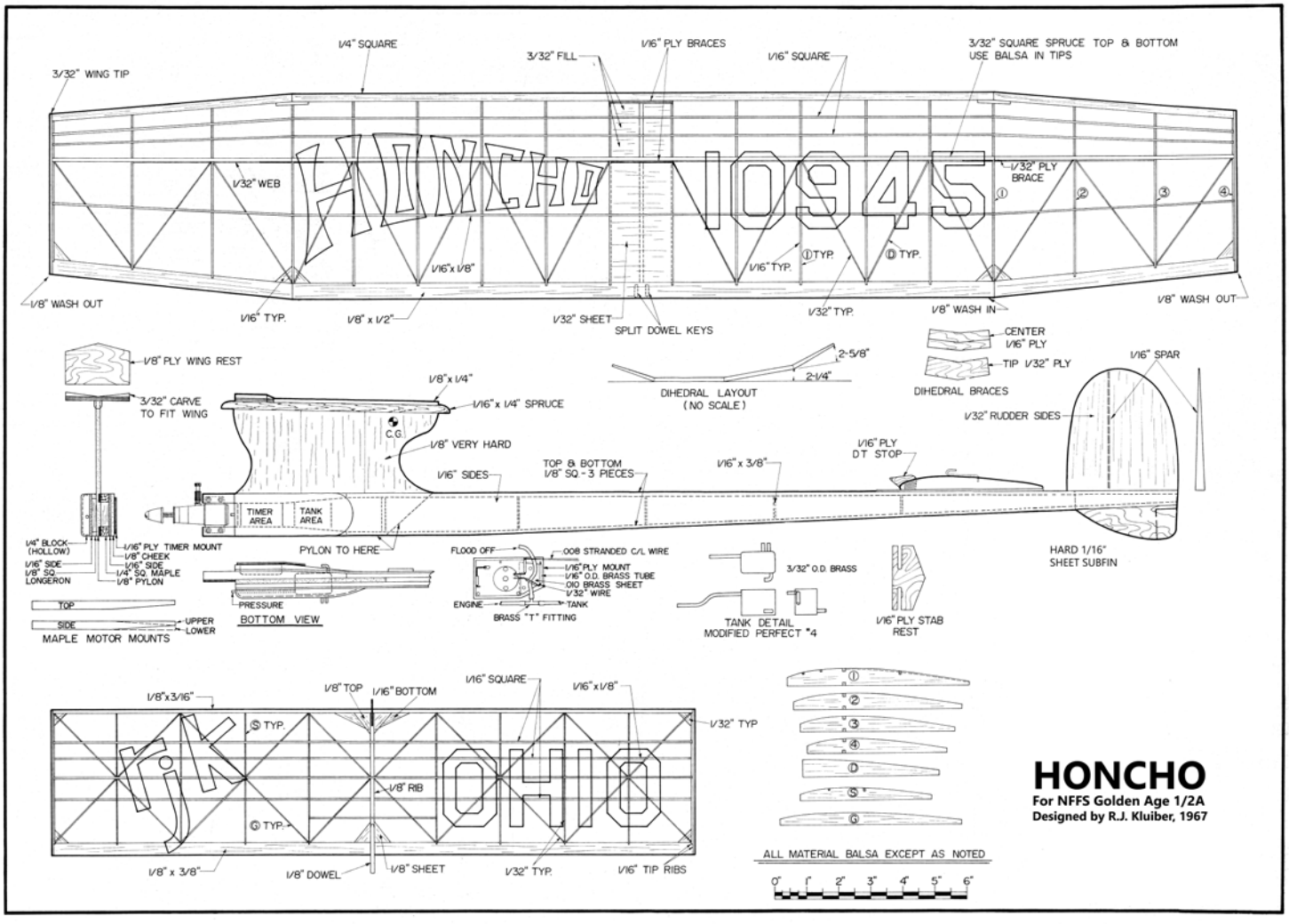
I was sold. Over the winter I built a 400 square inch A ship for a Cox Tee Dee .15. This was a direct scale-up from the little 1/2A. The A Honcho was a definite success the next season, but the 180-inch 1/2A proved a bit squirrelly especially in windy conditions, so I enlarged it to 226 squares. This version performed well and over the years while construction changed and AR and VIT were added that basic platform has remained the same.

The original versions had 9 to 10 degrees downthrust and would VTO nicely. When I added auto surfaces I removed the downthrust.

The wing and stab on the current NFFS plan presented here are exactly the same as flown in the 1960s. The body has the same moments as the original 226-sized model. Over the years I flew Honchos in every power class and size up to 800 square inches. I won B Gas at the 1969 Philly Nats and garnered many seconds and thirds in Nats competition.

It was also flown by old flying friend and former Nats champ Bucky Servaites and others. I still fly the same size AMA 1/2A Honcho now with a Profi .049 up front.

Rudy Kluiber, Lakewood, Ohio
rjkhoncho@yahoo.com



I volunteered to help with the model processing at the 2019 FAI World Free Flight Championship event at Lost Hills from October 15-22, as a way to give back to the sport I have enjoyed since 1957. I arrived at Lost Hills on Monday October 14 after spending Sunday night at Mike Thompson's house in Carson City, Nevada. Mike's house is about halfway from my house in Boise, Idaho and Lost Hills. Mike was on the U.S. F1A team and on Monday morning, we drove down to Lost Hills together in our own cars. I had made arrangements with Ed Carroll, who was the Head of Processing to stay with him on the field for the World Champs. I met up with Ed and Ron Young at the field and we talked about what was needed to process the models in the most effective way. Ron was going to help with the processing but became ill and left for home Tuesday.

There were 38 teams to be processed over a period of two days starting on Tuesday, October 15 and ending on Wednesday, October 16. Processing started at 9:00 a.m. and ended at 8:00 p.m. each day.

There was a time schedule for each team to come to have their models processed. The teams came in alphabetical order starting with Argentina and ending with Kazakhstan on Tuesday and continuing on Wednesday, starting with Latvia and ending with the U.S. Each team was allowed 30 minutes to process their models. The procedure to process the models was made simple and easy for everyone. The competitors would place their respective models on the tables along with their model specification certificates. The model certificates were checked to see if the model numbers were the same on all the model parts and all the entries places were filled out.

PHOTOGRAPHY: BRIAN FURUTANI

PROCESSING AT WONDERFUL PARK

Wonderful Park and Recreational Center was a gift from the Wonderful Company to the town of Lost Hills. The Wonderful Company processes the almond orchards which border the west and south sides of the flying site and has a large plant towards the west, which they process almonds and pistachios.

The Park itself was the site of the processing and registration of models and the opening and closing/award ceremony. The team of nine volunteers for processing was quite formidable with a combined Free Flight experience of some 540 years. There were six tables set up in one of the recreational buildings, two tables each for each class of models. F1A processing was done by Mike Roberts and Matt Gewain, the 1983 F1A World Champion. F1B processing was done by Glenn Schneider, Paul Crowley, Ed Carroll and myself. F1C processing was done by Ron McBurnett, Daryl Perkins and Larry Norvall.

There were several cases were some minor corrections to the certificates were needed, mainly a missing signature. The certificates were handed on to Ed to review for correctness and placed in a file which he kept. Once all the models had been checked and passed, the competitors were handed the processing stickers which they placed on all the model parts while we watched.

Everything went very smoothly with no real problems. The teams all arrived on time and were most helpful in the processing. Competitors were allowed to replace an already processed model with a new one up to one hour before the start of each event. Several models were processed in this way. There were a total of 994 models processed in the 2 days, F1A had 398 models processed, F1B had 368, F1C had 228. The estimated value of the processed models alone was approximately $2,982,000.

The approved towline checker was set up in a grass area next to the parking lot for checking lines and the official scale

was set up in the processing building to check model weights.

One of the nice things about being involved in processing, you get to see the latest models up close and study them and meet all the competitors from around the world. I will share a true story. I was processing the F1B models of Mickael Rigault from France and one of his models was an all carbon six-panel wing Stepan Stefanchuk design. I had seen a few others of this design, but for some reason, I had the feeling that this particular model could win the whole thing. Little did I know then, this was his winning model he used on his final fly-off flight.

There was no processing scheduled for Thursday, October 17. I took advantage of this by going to the flight line and spending some time watching the practice before the Opening Ceremony which started at 2:00 p.m. at Wonderful Park.

While I was watching the practice flights, a competitor I knew came up to me and told me there was a rumor going around the field that a particular model type was underweight and we should very carefully check those models. After careful consideration, no extra effort was made to single out this model type and all those that were checked as part of the normal process were all found to be up to weight. The rumor was dismissed as being unfounded.

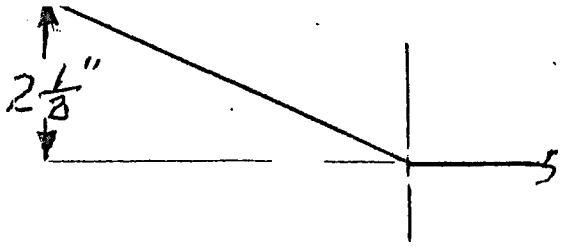
SPOT PROCESSING ON THE FIELD

The Sporting Regulations require that 20 percent of the models flown in each class be spot checked for compliance during the first seven rounds of competition. F1A had 103 entries which meant 21 entries had to be selected for checking, F1B with 97 entries had 19 selected and F1C with 57 entries had 14 selected. Paul Crowley and I were tasked with selecting the competitors to be processed from the teams on the flight line. These selected competitors would then go to the processing/scoring building on the field to be checked by Ed Carroll and recorded.

F1A models had their towlines checked for length and the models weighed. F1B had the motors checked for weight and the models checked for weight. F1C had their models checked for weight. We were given separate spreadsheets for each day's event that listed all the teams flying F1A, F1B and F1C. A computer program which generated random pole positions for each team for the seven rounds was used to make the sheets. Paul and I got together before the start of each round and very carefully selected the teams to have a member of its team to be spot processed on the field. We made an extra effort to only select a team once during the first seven rounds, so that no one team was penalized by sending more than one competitor. Circles were placed around the pole numbers of teams selected on the sheets. The flight line had 39 pole positions, which stretched east to west, some 380 meters or 1,246.72 feet long. Paul and I split the flight line in half, with him taking the west end and I took the east.

Prior to the start of each round, Paul and I would go to the selected teams and identity ourselves to the Team Manager and informed him that the first member of his team to fly had been selected to have his model processed after the flight. The reason for selecting the first team member to fly was simple as this gave the competitor the maximum amount of time for the model to be returned and processed before the start of the next round. We received 100 percent cooperation from each team and they all acted in a very professional manner. One model in F1B was found to be underweight and was disqualified on the field. During the rounds, I had a timekeeper tell me that the random selection of models to be processed was wrong and we should pick out competitors by name only.

continued on page 22

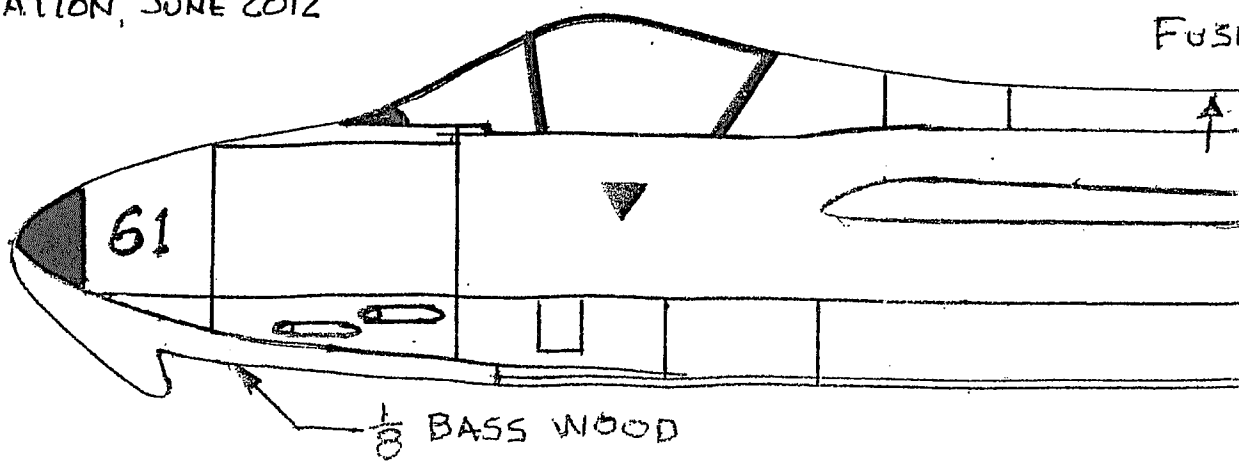


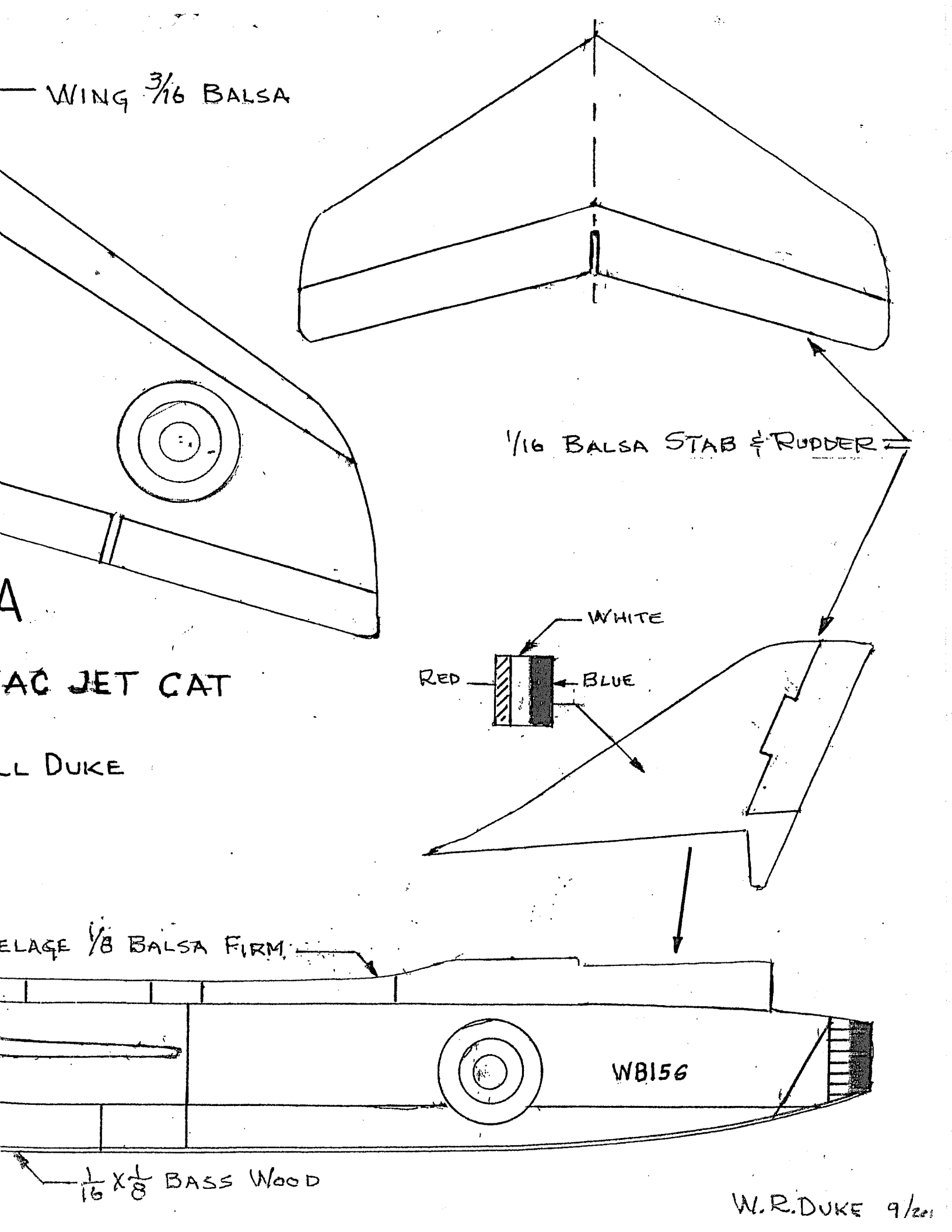
HAWKER MK 58
"HUNTER" F

MODIFIED AND DRAWN BY BI

DERIVED FROM AN OLD JETEX PLAN

REF:
TAILSPIN, MAY/JUNE 2013
F M FEBRUARY 2003
MODEL AVIATION, JUNE 2012





A

AC JET CAT

LL DUKE

W.R. DUKE 9/20

MODEL PROCESSING

continued from page 19

He failed to understand that by the random selection process, we took the personality out of the equation, which made the process fair and equal to all teams.

SPOT PROCESSING

After the final fly-off flights each day, the top three placing models were secured and taken to the processing building on the field to be very carefully checked. This was a lengthy process were the models were completely measured on all parts and areas calculated for size and the results compared to each model's Sspecification certificate. The model's weight was checked, had the towline length checked for F1A, rubber motors weighed for F1B, and F1C motors checked for displacement. The competitors were present during this process and I am sure there were some very nervous people waiting outside for the results. All models passed to the relief of many. The statistics behind this event are staggering. The total flight time in seconds for all flights including fly-offs was 394,457 seconds, which is 6,574 minutes or 109.56 hours. F1A had a total flight time of 150,080 seconds, F1B had 157,352 seconds, F1C had 87,025 seconds. F1B with 97 competitors actually had a total flight time of 7,272 seconds more than F1A with 103 competitors. The total number of flights in competition was 1,830. F1A had 709 flights, F1B had 726 flights, and F1C had 395 flights.

REFLECTIONS ON THE WORLD CHAMPS

I spent 10 days at the World Champs and came away wishing it went on for another 10. I never thought processing models was so much fun. I met a lot of really great people from around the world and made new friends and renewed old friendships. Seeing Artem and Sasha Babenko again was a lot of fun. Having Yury Shvedenkov, the 2017 F1C World Champion and the second place finisher in 2019 helped translate for me when I talked to Artem when Sasha was busy elsewere was a real nice gesture on his part. The time I spent with NFFS President John Lorbiecki was priceless. Becoming friends with Or Shabat, who came in fifth place in F1B, which helped the Israel F1B Team take first place in the Team Championship, and Saar Issakov, who flew F1A on the Israeli Team. I exchanged a U.S. Free Flight Championship jersey with Saar for an Israeli Team jersey which made for a nice memento.

I watched the early morning fly-off flights for F1B and saw Mickael Rigault from France give his launch everything he had, which got his model a little higher than the others, which helped him to become the first French Wakefield winner since Emmanuel Fillon in 1937. Mickael and Jean-luc Drapeau from France and I have become friends. Constantin Brinzoi of Romania, the 2019 F1A World Champion and I have had long conversations on Messenger. Constantin provided a photo of him taken very early in the morning before his Final fly off flight for the article.

Most people would think that this is just another photo. Actually, that photo is really "A Moment in Time Captured Forever." It shows Constantin holding his F1A model waiting all alone, thinking about what was going to happen in the next few minutes. At this point in time, he is no longer competing against others, but competing against himself to realize his dream. Kind of Poetic in a way.

Mike Schwartz, Hailey, Idaho
Satellite13@outlook.com

STEALTHY U.A.V.

WALKALONG GLIDER

FEB. 2019 - David Aronstein

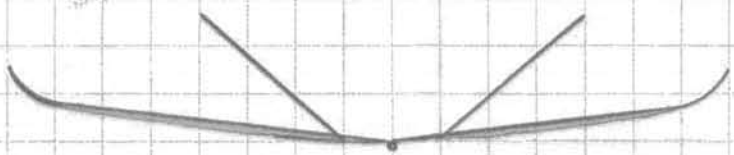
ADJUSTMENT:

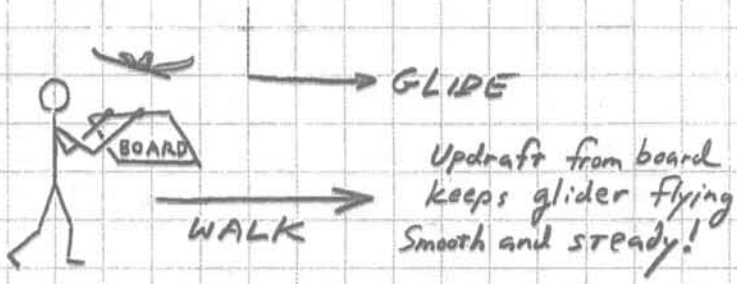
GOOD GLIDE

STALL: Add a bit more nose weight

DIVE: Bend elevators up a bit more, or remove some nose weight

REAR VIEW:





Noseweight: Thin ($\frac{1}{32}$" × $\frac{1}{32}$" or similar) basswood stick, glued to nose and projecting forward, with a little bit of clay on the end.

A life member of AMA and NFFS, Harry Grogan started modeling in the late 1950s building Comet and Guillows stick and tissue kits. He flew competition control line events in the 1960s and discovered Free Flight in the early 1970s. He has BS degrees in aerospace and mechanical engineering from the University of Florida and is a registered Professional Engineer. He retired from Lockheed-Martin Corp. in 2006 as a Senior Staff Engineer and moved to the North Carolina mountains. He was editor of the 2006 NFFS Symposium and co-editor of the 2017 Symposium. He has flown ½A through C Gas, P-30 and Mulvihill rubber, HLG, F1A and F1H towline glider, and most recently electric power events. He holds the current AMA record in E-36.

How many times have you watched a power model start out with a nice climb, and as it picked up speed it would begin looping all over the sky? Sometimes it might do big barrel rolls to the left or start racing around to the right without climbing much only to have the nose pick up and start climbing again. This is a classic case of too much decalage, and the fix is to lower the trailing edge of the horizontal stabilizer. A convenient way to think of this is giving it some down elevator. The right amount will fix the climb problem but it also speeds up the glide. One must then add weight to the tail to bring it back to where the model has a nice, slow glide. So, is this the end of the story? Not necessarily. Sometimes our retrimmed model will start stalling in the glide and the stalls may continue to get worse, ruining the flight. In other cases it might climb straight up, and after the motor quits have it drop the nose and dive all the way to the ground. What's going on here?

The first thing to consider is the fact that our free flight models must be inherently stable in all phases of flight – both climb and glide. They do not have a tiny pilot on board to make constant corrections. Full size aircraft have short tail lengths and small stabilizers. Free flight models have long tails and large stabilizers, and there is a reason for this. Our models have evolved this way in order to remain stable when climbing skyward and gliding in strong thermals or turbulent conditions. It is important to remember that power models are still gliders. The powered part of the flight is to get them as high as possible using a short burst of power. They then transition from climb to glide. After that they become gliders for the remainder of the flight. These are conflicting requirements. During these three phases of flight the model must remain stable but not too stable to ensure it will perform at the maximum it is capable of. In order to understand how that is possible there are some basic principles of stability and control.

Principle #1: The center of gravity (C.G.) location determines the pitch stability of the model. Moving the C.G. forward will increase stability and moving it rearward will decrease stability. The C.G. must always be forward of the point of neutral stability (NP). The greater the distance between them, the greater the stability.

Principal #2: Too much pitch stability increases the sink rate. There is always a tradeoff between stability and performance.

Principle #3: The C.G. location determines the amount of decalage between the wing and horizontal stabilizer. Moving the CG forward will increase decalage and moving it rearward will decrease decalage.

Principle #4: The primary role of the stabilizer is to control the wing's angle of attack. In flight it tries to keep the wing at a constant angle of attack.

Getting power models to glide is relatively easy. The best

glide is obtained at a speed slightly above a stall, and this can be achieved by either changing the stabilizer incidence, moving the C.G., or changing the turn radius. Figure 1 shows a model in a steady glide. A typical lift to drag ratio for an AMA power model is around 10:1 to 12:1, and this corresponds to a glide angle of 5 to 6 degrees. The lift of the wing LW and horizontal stabilizer LH are defined as being perpendicular to the direction of motion. The weight of the model W is concentrated at the center of gravity and will always point straight down. The weight has components both perpendicular to and parallel to the direction of glide. Since there is no thrust from a propeller, a small portion of the weight is what pulls it forward; i.e., the propulsion is gravity. Basic trigonometry reveals that this forward

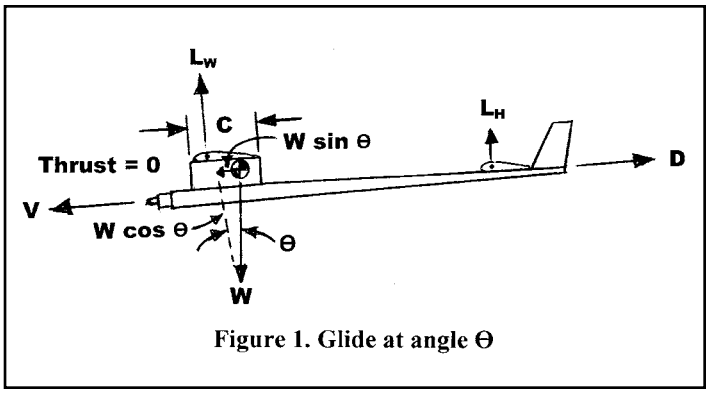


Figure 1. Glide at angle θ

"thrust" is about 10% of the model's weight. All forces and moments are in balance. The total lift of the wing and stab are equal to the total weight of the model reduced by the cosine of the glide angle, which is about 99% of the weight. Since lift is slightly less than weight, the model has to descend. The center of gravity of free flight models is always aft of their wings' center of lift, which is typically at the quarter chord. Since wing lift is in the opposite direction from the weight and is separated by a fixed distance, it creates a positive (nose up) moment. In order to balance this positive moment, the stabilizer must create a negative (nose down) moment. This means the stab also has to lift, and its long distance from the C.G. creates an equal but opposite moment. This moment can be changed by increasing or decreasing the tail length, stab area, stab airfoil, and/or angle of incidence. The difference between the wing and stab angles of incidence is called decalage. If the C.G. were to move further aft, the nose up moment would increase due to the increased leverage. If it moves too much it could lead to a stall. To balance this problem the stab must lift more by lowering the trailing edge, thus decreasing the decalage (Principal #3). This in turn will speed up the glide slightly and reduce the tendency to stall.

When power is applied things get more interesting. The increased forward velocity will increase the wing and stab lift by an amount proportional to the velocity squared. If the stab is fixed and the model has a positive decalage, it acts like an up elevator and the nose will rise. As more power and thrust is applied, more lift is created and the steeper the climb will be.

Figure 2 shows the forces that come into play. A component of the weight W is now parallel to the fuselage and points rearward opposing the thrust T. When a power model accelerates the propeller thrust decreases as it gains speed. The drag D of the model increases, so when the thrust equals the drag plus part of the weight, the model will then climb at a constant velocity V. When enough power is applied the nose will rise to vertical (Figure 3). At this point the lift is in a horizontal direction and there are no forces to oppose it. The model will begin to loop over the top of the climb. There are a few options to stop that from happening.

Use up to 20 degrees of motor down thrust. This will oppose the excess wing lift, but the amount depends on the model's velocity. At launch the motor has maximum static thrust and the wing has no lift at all. This is when down (and side) thrust is most effective. A launch that gives the model some initial speed is advised. If the motor thrust line is angled downward enough to be above the model's center

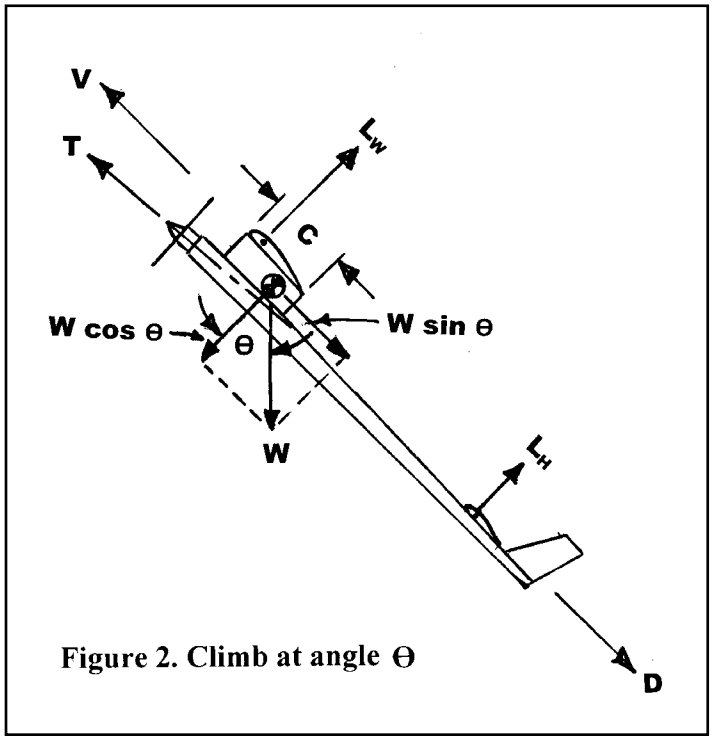


Figure 2. Climb at angle θ

of drag, it will force the wing to fly at a negative angle of attack. This not only reduces or eliminates excess wing lift but it is close to the airfoil's minimum drag angle of attack, allowing the model to climb faster. This trimming technique works well for vertical climbs.

Use a very high thrust line (VHTL) configuration. This rotates the nose about the C.G., forcing the wing to fly at a negative angle of attack. This also works well for vertical climbs.

Increase the stab incidence. The tradeoff here is that the glide will be faster, so the C.G. will have to be moved back by adding weight to the tail. This is an unpleasant option after going to great lengths to build a very light stabilizer and aft part of the fuselage. A fore-and-aft adjustable wing platform or pylon is worth considering to resolve that issue.

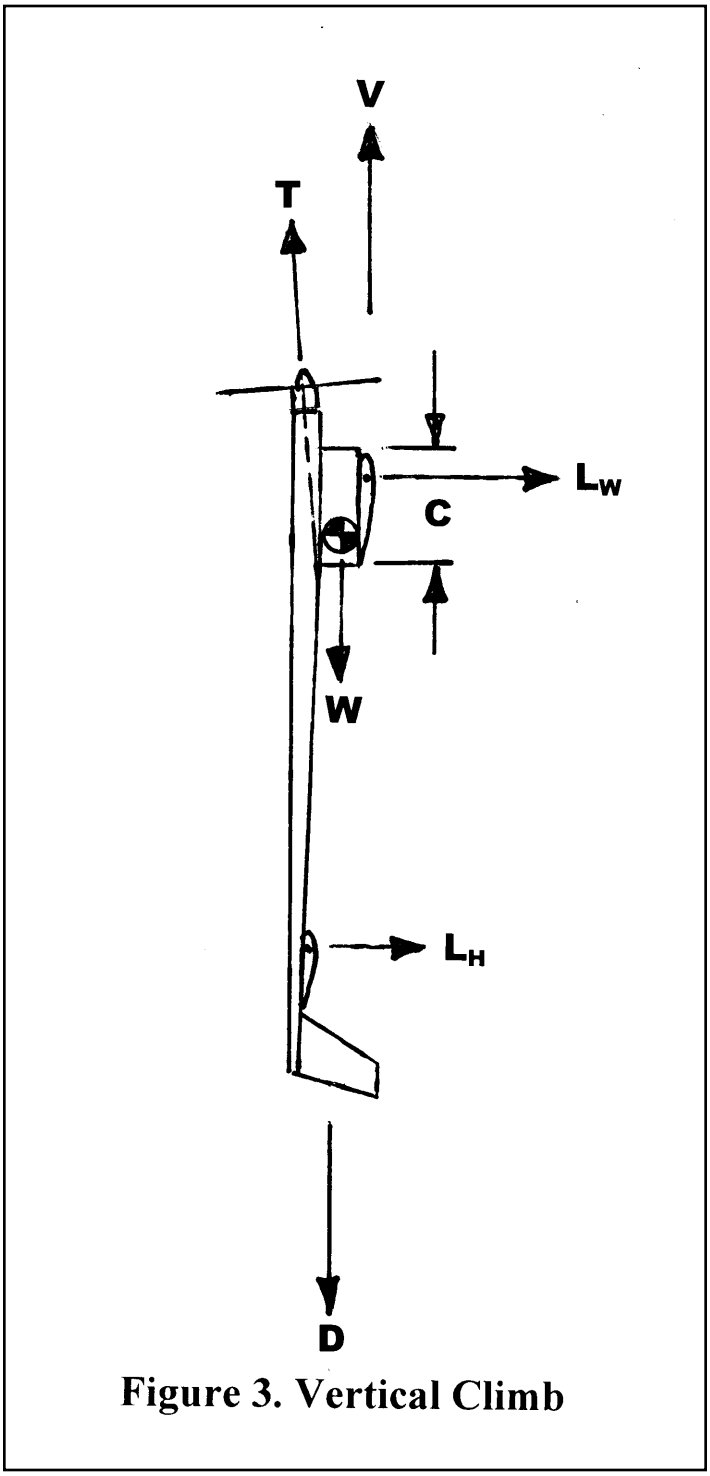


Figure 3. Vertical Climb

Introduce yaw and roll to the model. It cannot loop if it is constantly rolling. For a right-hand climb this means adding some right rudder and wash-in to the starboard wing. These adjustments must be coordinated. Too much of one or the other will make things worse. A classic spiral climb uses these adjustments.

There is another aerodynamic force in addition to lift and drag called airfoil pitching moment. This moment is always negative (nose down) and is defined and measured at the wing's quarter chord. The higher the mean camber is, the greater the negative pitching moment. It is relatively unimportant during glide but becomes significant at high speeds. During glide it helps to offset the nose up moment caused by the C.G. being behind the center of lift. The stabilizer acting at the end of a long tail has a much greater control over the wing. However, at high speed this force can become considerable because it increases with the square of the velocity, just as the lift of the wing does. Since the wing is strapped tightly to the fuselage, this force creates a negative twist on the entire wing causing the tips to twist downward. If the wing is not stiff enough in torsion the model may start an outside loop and/or a roll.

For high powered/fast climbing models, it becomes obvious that reducing decalage to a minimum tames the looping tendency. It means placing the C.G. more to the rear to obtain the best rate of sink. If moving the C.G. rearward reduces pitch stability, how far can it go? The answer is to fly a model with the proper tail volume coefficient, abbreviated TV_O. It is defined as: (stab area / wing area) x (tail length / average wing chord). It must be large enough to allow small decalage settings but not so large that the decalage becomes negative. Yes, that can happen, and when it does the stabilizer could stall before the wing does. This would be

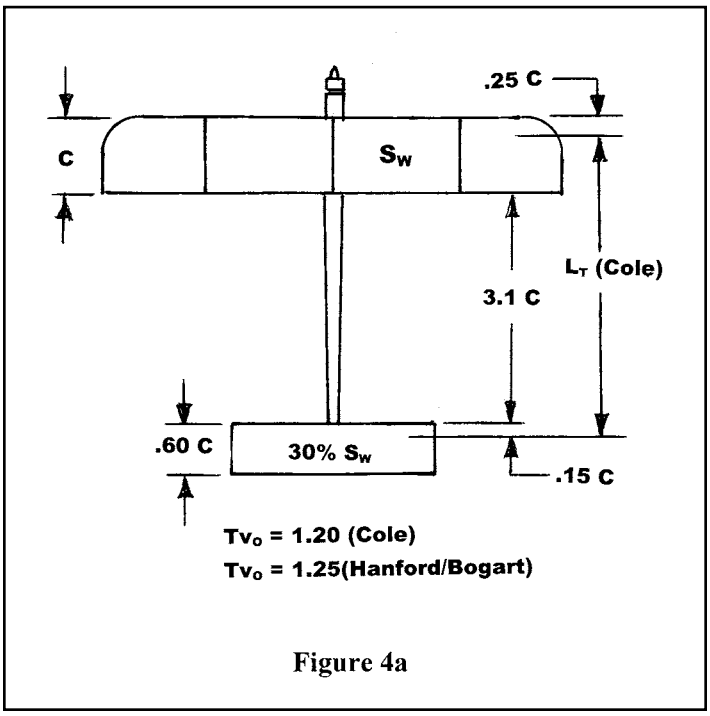


Figure 4a

followed by a sudden pitch up and a general out of control flight. Principal #1 tells us that the C.G. must be in front of the neutral point (NP), so where is that? There are several methods for calculating the neutral point, but the easiest to use is either the Hank Cole method or the Hanford/Bogart method. The Cole longitudinal stability method was published in the January 1969 issue of *Indoor News and Views*.

Cole tail volume coefficient: TvO = (SH / SW) x (LT / CW)

Cole neutral point: NP = .25 + CF x TvO

Center of gravity: CG = NP - SM

The correction factor *CF* is based on the wing and stab aspect ratios, and varies from .42 to .50 for typical AMA power models. The length of the tail *LT* is from the wing quarter chord to the stab quarter chord. Chords must always be the mean or average chord, and can be calculated by C = Area / Span. Projected areas and spans should be used instead of flat for best accuracy. Once you calculate the NP, you need to decide on how much stability margin SM to use. I have found that 10% of the wing's average chord (.10 CW) works well for average climbers and 5% (.05 CW) works well for fast climbers. This will get you close to the perfect C.G. location for climb and glide, but flight trimming will usually require moving it a small amount.

The Hanford stability method was published in the 2011 NFFS Symposium. It is very similar to the Bogart method originally published in the January 1959 issue of *Model Airplane News*. It uses a correction factor of .44 or .45, so that implies the wing and stab aspect ratios are typical of power models – about 8:1 for wings and 4:1 for stabs. I have converted the Hanford lines of CG vs. TV_O into two equations.

Hanford Design Line: CG = .20 + .45 x TvO

Trimming Locked Down Power Models

As the late great Bill Gieskieng once told me, "Trimming auto surface power models is easy, it's the locked down models that are the most challenging."

One day at the flying field I was watching some power models and noticed that at least one of them was over-elevated and doing horizontal loops about every third flight. Another flyer asked him, "Why don't you use less decalage (incidence difference between the wing and tail)?" The flyer replied that if he did that it would glide too fast and might dive. So I suggested trimming the climb and then moving the center of gravity (C.G.) aft to re-establish the glide. The flyer responded with, "Oh, I never thought of moving the C.G." I was surprised by that response from this very experienced power flyer. So I thought about it and decided a short article might be useful in case there were others struggling in the same way.

So what makes auto-surface models easier to trim? The adjustments for the climb phase of the flight can be isolated from the glide phase. Since both the stab and rudder change incidence during the flight, the climb can be trimmed without affecting the glide and vice versa. But with locked down models every stab incidence change and rudder adjustment affects both climb and glide. Most people fly with an aft C.G. and try to find a compromise position for the stab and rudder. That often leads to overly loopy power patterns or very straight patterns with poor transition and recovery. So the obvious question is, "How do you isolate the glide phase from the climb when the stab and rudder remain fixed? The answer is CG and wing tilt.

C.G.: First the model's climb is trimmed with stab and rudder adjustments. The glide is ignored and a quick DT is used at the top of the power pattern. Once the climb is set, the glide can be addressed by moving the C.G. Obviously if the C.G. is too far forward, weight can be added to the very back of the fuselage. But if the C.G. is too far aft, firewall spacers can be added to move the engine/motor forward, increasing the moment arm forward of the CG. This will have very little effect on the climb.

Wing tilt: With the rudder adjusted for climb, the glide circle may not be ideal. Typically glide circle on an AMA power model is achieved with built-in stab tilt. However, with most three-point stab mounts further tilting of the stab will change the incidence and ruin the climb trim. But wing platforms are usually rectangular which enables one side to be shimmed with no change to the decalage. The difference between the tilt of the wing and tail will have exactly the same effect as traditional built-in tail tilt.

Further changes to climb trim will obviously also affect the glide and require further glide adjustment, but this method at least enables glide trimming to be isolated from climb trimming and fewer compromises are required.

—Chuck Etherington

Hanford Border Line: CG = .25 + .44 x TvO

In this case the tail length is defined as from the wing leading edge to the stab quarter chord, so tail volumes will be slightly larger than those calculated by the Cole method. The Design Line shows where to locate the C.G. when starting to fly a new model. The Border Line shows the farthest aft CG one should use and is suitable for very fast climbing models. The Hanford method does not mention a stability margin. The Border Line is very close to the Cole neutral point line. Since the Design Line is 4–5% of the mean chord forward of the Border Line, this implies a 4–5% stability margin.

Since the C.G. must be far enough back to reduce the decalage, what tail volume coefficient should we use? I have found that it should be between 1.20 and 1.40. The faster the climb, the higher the TV_O should be. This gives the best combination of tail length, stab area, and C.G. to produce straight climbs, optimum glides, and good stability. Figures 4a and 4b show what this looks like. There are exceptions to this rule. George Fuller's famous Dixielander from the late '50s and early '60s had a TV_O of 1.60. The stab was 40% of the wing area, the decalage was zero, and the C.G. was at the trailing edge of the wing. The model was known for its ability to use motors much larger than what it was originally designed for, yet it handled the extra power with very few problems. You may ask why was the tail volume so high? I believe it was needed because of the wing's undercambered airfoil. Since it would have more lift than a flat-bottomed airfoil, it was necessary to use less decalage to force the wing to fly at a lower angle of attack during the climb. That meant moving the C.G. and NP back even more, so a higher than normal TV_O was required. In 1972 the Dixielander was a NFFS Model of the Year. The 3-views were of a newer version that increased the stab area to 46% of the wing area, increasing the TV_O to 1.89. In the description of the model, Fuller explained that he moved the C.G. of his fastest models to ½ inch behind the trailing edge. The stab incidence was reduced another 3/32 inch, so this reduced the decalage to -1 degree! Using the Cole stability method, a wing aspect ratio of 7.1:1 and a stab aspect ratio of 4.5:1, the calculated neutral point comes out to 1.13 C, or 113% of the 7-inch mean chord. This puts the NP at 7-7/8 inch behind the leading edge. Assuming an SM of 6% which is appropriate for a fast climbing model, the calculated C.G. is (drum roll please) 7-½ inches – exactly where he learned to locate it by trial and error.

Longitudinal stability is only part of the story of a succesful power model. Spiral stability also plays a key role and will be discussed in Part 2.

Harry Grogan, Weaverville, N.C.
harrygrogan2011@charter.net

Affect of C.G. Location On Locked Down Pylon Models

The following applies to high speed standard pylon models with no auto surfaces. Every model has an optimal C.G. location along with the amount of incidence it has. The faster a model goes the more critical this becomes. With a C.G. location too far forward the model will tend to go to the right and waste power in the climb as it spirals up. With the C.G. too far back the model with tend to go more to the left and actually go flat in the climb resulting in a crash if the engine runs too long.

With a C.G. too far forward and too much incidence some designs compensate for this using down thrust. If done to the extreme the model will actually pitch up when the engine shuts off.

But what about power level verses C.G. location. The faster a model goes the more it amplifies if the trim or C.G. location may not be optimal. This is the same as if you have some warps in the flying surfaces the faster you go the more pronounced their undesirable effect is. When you start your initial trimming sessions on a new model we typically start at a lower power level and shorter engine runs for this very reason.

For my Astrostar design I fly it balanced at a C.G. location of 78% with no fuel. If you fly it at a slightly more forward C.G. it will wind up more in the climb and if you move the C.G. back too far in will go flat and to the left in the climb.

Adding tail weight or adding spacers under your motor mount is just one of the many trim techniques you can use to get the optimum trim on any high speed pylon model you are flying with locked down surfaces.

—Terry Thorkildsen

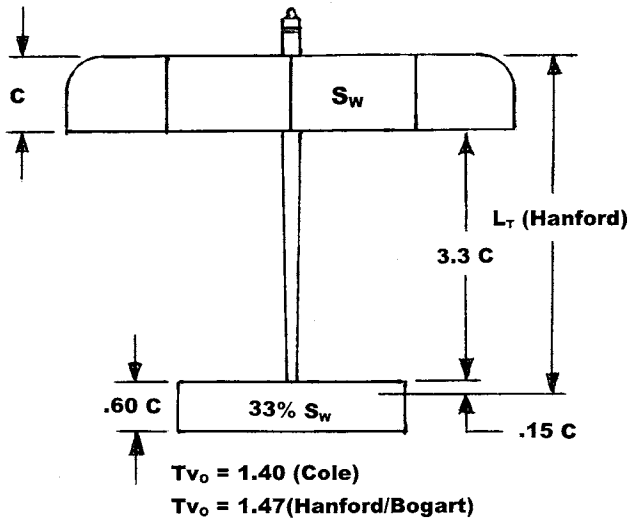
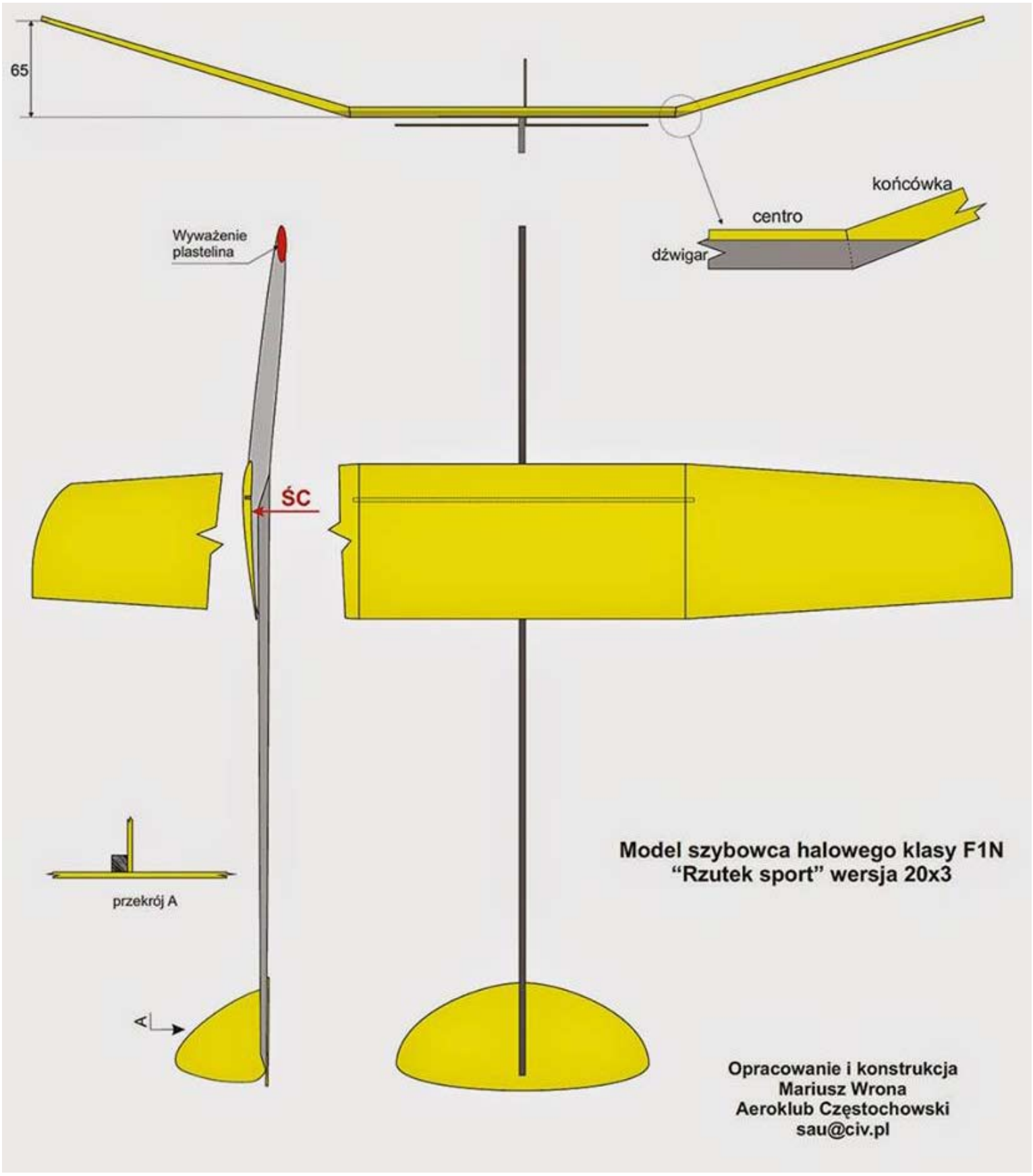


Figure 4b


65
końcówka
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A
Model szybowca halowego klasy F1N
"Rzutek sport" wersja 20x3
Opracowanie i konstrukcja
Mariusz Wrona
Aeroklub Częstochowski
sau@civ.pl

"One of the new models I was able to complete is my take on a T-37 Jet Cat. A T-37 won the 2019 Nats with a rather spectacular fly away flight. Inspired by watching that flight I thought why not try a T-37 myself. Of course I could not buy the nice T-37 kit from Volaré Model Products, I had to do one of my own. The results are shown here. I did post the plan and printed tissue layouts on my web site (<parmodels.com>) in the downloadable plans section."
—Paul Bradley, Kentucky

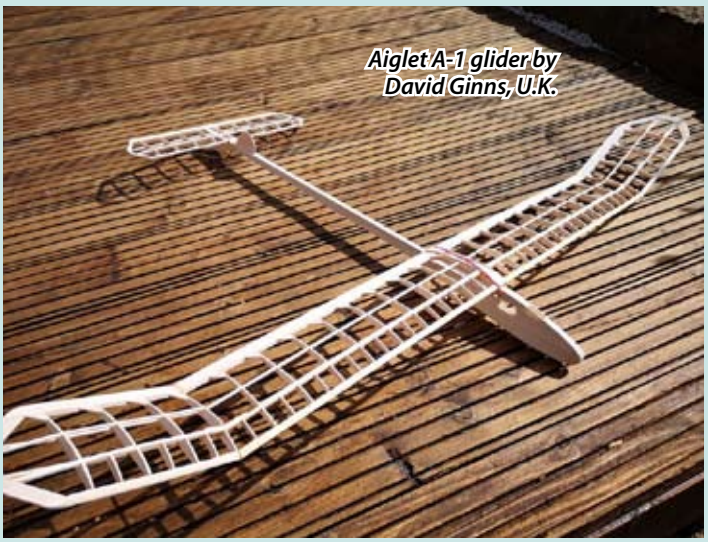
1960 Gloworm Vintage FAI Power by Nigel Tarvin, Canada

"After rebuilding Joe Peters 1/2A Magna design from 50 years+ ago. This is, I believe, the first of several versions of the design. It was a contest winner in its day and should still be in Classic Power. Has 240 square inch wing and weighs 6.75 oz. after repairs, paint and recover."
—John Seymour, Ohio

"Beautiful Lindner 1955 Nordic just finished. Really pleased with it, very elegant and refined. Hope I get to fly it this year in U.K. Classic or BMFA Glider. I decided on no timer just radio DT."

—Simon Dixon, U.K.

Febe P-30 by Beto Castrucci, Argentina

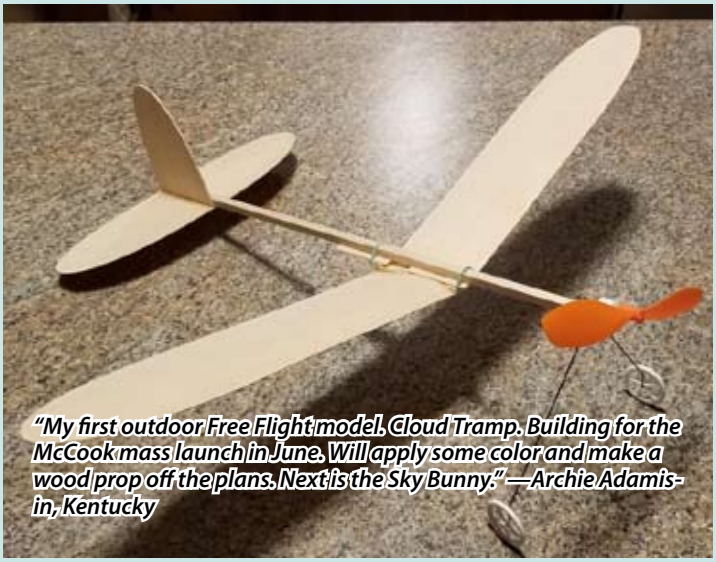


Aiglet A-1 glider by David Ginns, U.K.

Lucky Lindy by Ed Decker, California

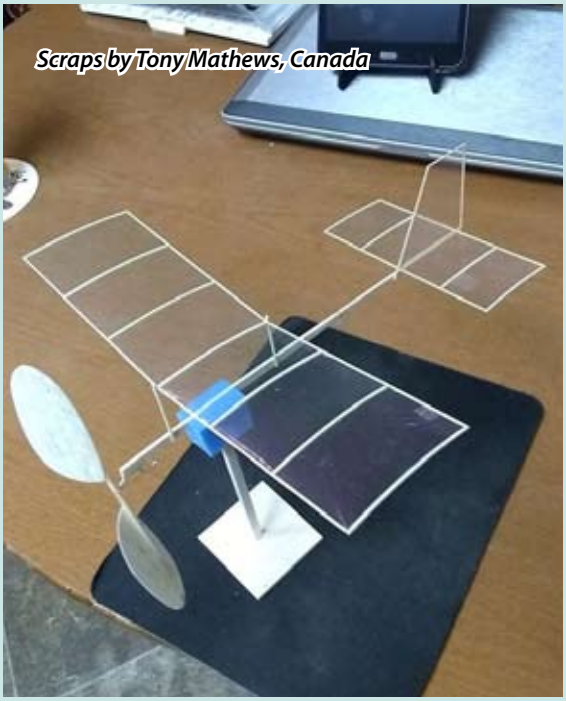
"Lanzo Stick ready to cover. I just finished a Wanderer too that's ready to trim." —Alan Petersen, Arizona

Harry Carry Payload by Rudy Kluiber, Ohio



"My first outdoor Free Flight model. Cloud Tramp. Building for the McCook mass launch in June. Will apply some color and make a wood prop off the plans. Next is the Sky Bunny." —Archie Adamis-in, Kentucky

Scraps by Chuck Andraka, New Mexico



Scraps by Tony Mathews, Canada

"Love my stooge. Wanted one of these FOR-EVER...it only took a worldwide pandemic to get me to focus!" —Peter Torraca, New York

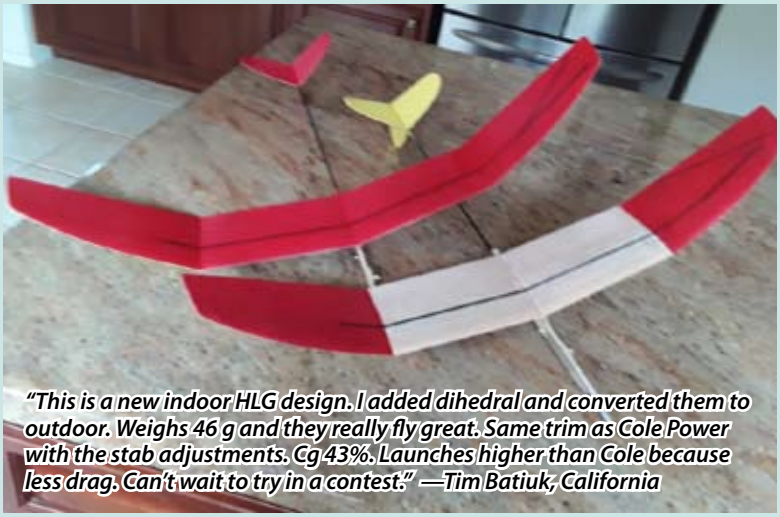
"My new F1Q 'Rat Rod' nearing completion...gull winglet center sections with world class F1B wings...wlyk if it works."
—Jack Murphy, Utah

Orbiteer for 1/2A Golden Age by Randy Secor, California

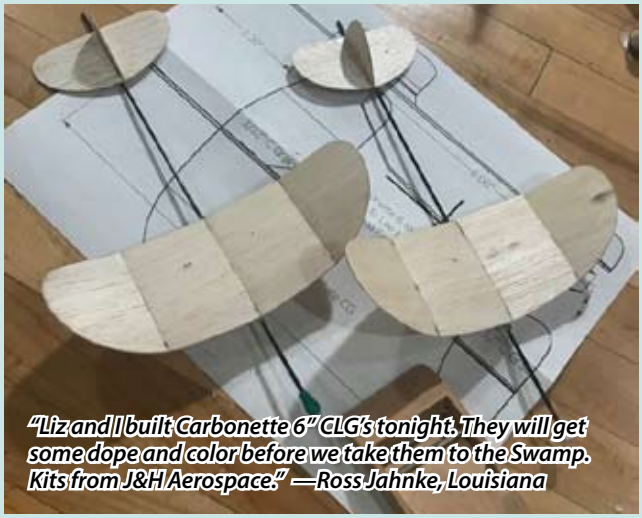
Fokker D.VI by Dohrm Crawford, Georgia

Gee Bee D by Scot Dobberfuhl, Oregon

Scraps and indoor glider by Bill Silin, Canada



"This is a new indoor HLG design. I added dihedral and converted them to outdoor. Weighs 46 g and they really fly great. Same trim as Cole Power with the stab adjustments. Cg 43%. Launches higher than Cole because less drag. Can't wait to try in a contest." —Tim Batiuk, California



"Liz and I built Carbonette 6" CLG's tonight. They will get some dope and color before we take them to the Swamp. Kits from J&H Aerospace." —Ross Jahnke, Louisiana

Ministick by Kevin Sharbonda, Arizona

Dynamoe by Chuck Powell, Kansas

Scraps by John Lorbiecki, Wisconson

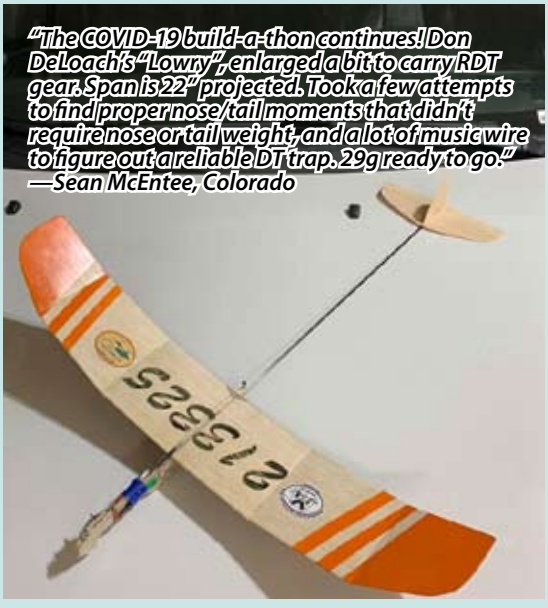
"COVID isolation project 3, Easy Built 35" span Harvard. The design is from 1940 and the scale outlines are not correct, fuselage is rather stretched...so I got a little non-scale with the markings, just a fun quasi-scale appearance. All markings are homemade water-slide decals. The fillets and that greenhouse were the biggest challenges but I'm happy enough. A good bit of washout helps..the test glides in the backyard are amazing." —Eric Boehm, New York

Challenger Old Time Rubber
by Joshua Finn, Georgia

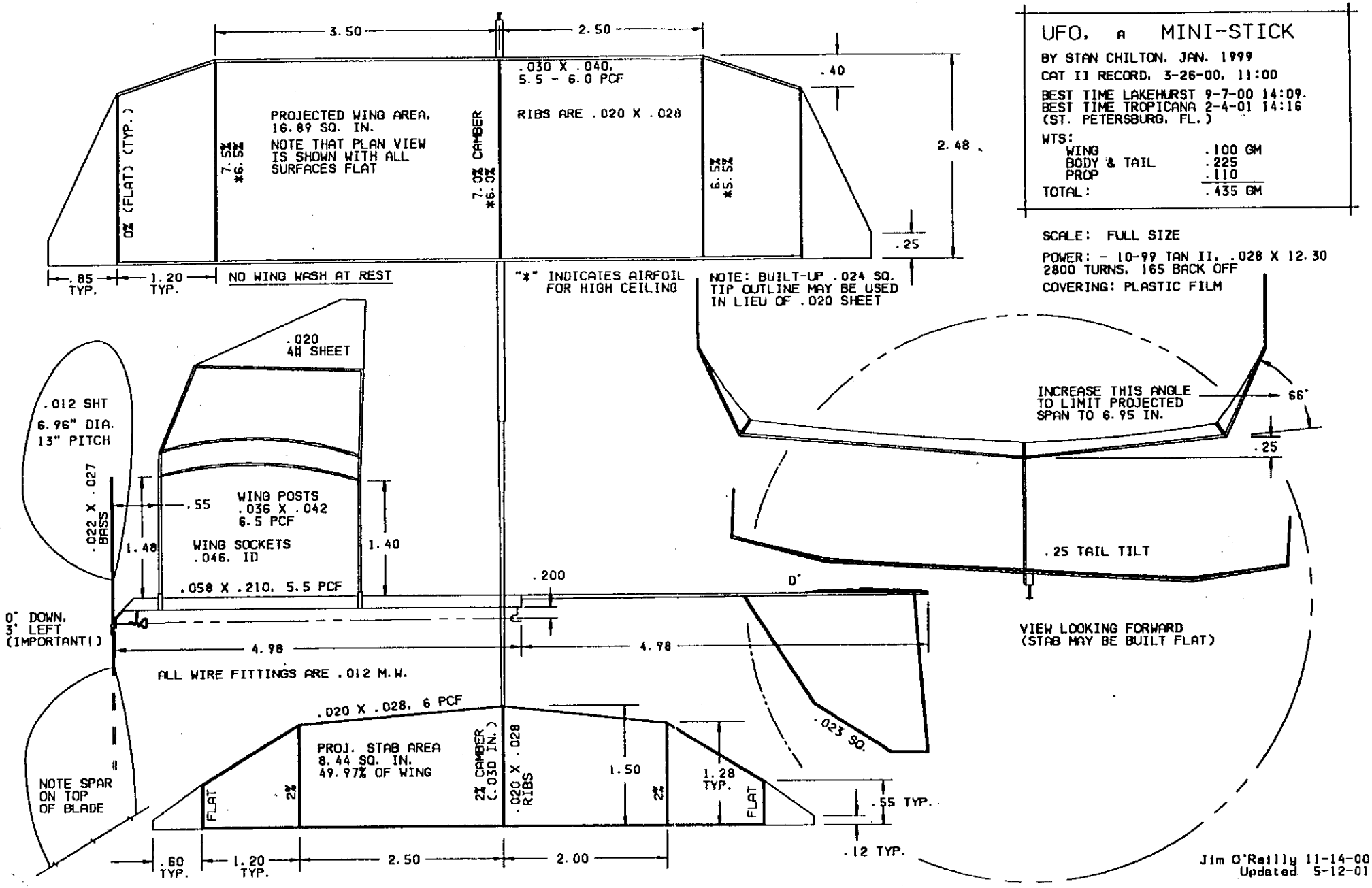
"Cuteness personified. 5.4g of Keleher Lark bones. Thirteen-inch span, from Walt Mooney plans." —Michael Kelly, Texas

"High Climber, a new catapult design, 18-inch span." —Frank Menanno, Colorado

Two new F1Hs and a Nostalgia 1/4A
Top Banana by Mike Fedor, Texas



"The COVID-19 build-a-thon continues! Don DeLoach's "Lowry", enlarged a bit to carry RDT gear. Span is 22" projected. Took a few attempts to find proper nose/tail moments that didn't require nose or tail weight, and a lot of music wire to figure out a reliable DT trap. 29g ready to go." —Sean McEntee, Colorado



UFO, a MINI-STICK

BY STAN CHILTON, JAN. 1999

CAT II RECORD, 3-26-00, 11:00

BEST TIME LAKEHURST 9-7-00 14:09.
BEST TIME TROPICANA 2-4-01 14:16
(ST. PETERSBURG, FL.)

WTS:

WING	.100 GM
BODY & TAIL	.225
PROP	.110
TOTAL:	.435 GM

SCALE: FULL SIZE

POWER: - 10-99 TAN II, .028 X 12.30
2800 TURNS, 165 BACK OFF

COVERING: PLASTIC FILM

Jim O'Reilly 11-14-00
Updated 5-12-01

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CAD Plans & Short Kits 425 plans, OT Rubber, OT Gas, Nos Rubber, Nos Gas, AMA, Scale. Annual One Design models. For price list send $5 to Jim O'Reilly, 4760 N. Battin, BelAire, KS 67220. (316) 744-0856. Accept check or PayPal. See web site: <jimoreillymodelplans.com>

Large Tapered Carbon Tail Booms Three sizes, Two wall thickness. (Large ID->Small ID, estimated wt gr.) Std Booms (1.22"->0.4", 52) (1.45"->0.63", 68) (1.6"->0.8", 70) all .010" wall, 46" length. $70 each. XT Booms (1.22"->0.4", 76) (1.45"->0.63", 98) (1.6"->0.8", 103) all .015" wall, 46" length, $90 each. Actual weight is estimated wt +/- 10%. Shipping for up to 3 booms $20. Light weight aluminum carbon booms coming soon! Contact Matt Gewain <mgewain@gmail.com>.

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E-36 Save your airplane Control your flight with the SLFT-RDT timer with two push operation. Flight tested by Ralph and Stan. <www.starlink-flitetech.com>. 858-231-4994.

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July 2019

5		Scale Staffel/Cruisers Indoor	FAC, AMA, FAI	NR	SS/SDC	San Diego, Calif.	George Mansfield [illegible]
5		TTOMR Monthly	AMA	NR	TTOMR	[illegible], Ga.	[illegible]
7	8	Dixie Nats	AMA, NFFS, SAM, FAC	NC	FMR	Palm Bay, Fla.	[illegible] 321-727-9130
10		F1E World Cup	FAI	WC	MMM	Denver, Colo.	www.themmmclub.com
11	12	[illegible]	FAI, AMA, NFFS, SAM	AC, NC	[illegible]	Denver, Colo.	[illegible]
11		Skyscrapers Monthly	FAI, NFFS, AMA	NC	SSS	[illegible], N.Y.	D. Acken 914-[illegible] [illegible]
12		Summer Meet	SAM, AMA, FAC, NFFS		MMAC	[illegible], Minn.	Gary Dahlen [illegible]
14	18	Flying Aces Nationals	FAC	NR	FAC	[illegible], N.Y.	[illegible]
18		TTOMR Monthly Indoor	Indoor, AMA, FAC	NR	TTOMR	[illegible], Ga.	Mick Roy [illegible]
27	31	AMA Outdoor Nationals/USOC	AMA, FAI, SAM, FAC, NFFS	NC(E), AC	AMA	Muncie, Ind.	www.modelaircraft.org

August 2020

2		Scale Staffel/Cruisers Indoor	FAC, AMA, FAI	NR	SS/SDC	San Diego, Calif.	George Mansfield [illegible]
3	9	F1A-B-P Junior World Champs	FAI	N/A	FAI	Deva, Romania	fai.org
8		Skyscrapers Monthly	FAI, NFFS, AMA	NC	SSS	[illegible], N.Y.	D. Acken 914-[illegible] [illegible]
8		TTOMR Monthly	AMA, FAC, SAM	NR	TTOMR	[illegible], Ga.	[illegible]
8		[illegible]	SAM, AMA, FAC, NFFS		MMAC	[illegible], Minn.	Gary Dahlen [illegible]
8		[illegible]	AMA, FAI, NFFS, SAM	NC	[illegible]	Denver, Colo.	[illegible]
15		TTOMR Monthly Indoor	Indoor, AMA, FAC	NR	TTOMR	[illegible], Ga.	Mick Roy [illegible]
16		Canada Cup	FAI	WC	TFG	Tecumseh, Ont.	Tony Mathews tmathews180@gmail.com
15	16	[illegible]	[illegible]	NC	[illegible]	[illegible]	[illegible]
18		Huron Cup	FAI	WC	TFG	Tecumseh, Ont.	Tony Mathews tmathews180@gmail.com
21		[illegible]	NFFS, AMA	NR	[illegible]	[illegible]	[illegible]
21	22	[illegible]	AMA, NFFS, SAM	NC	[illegible]	[illegible]	[illegible]
21	22	[illegible]	AMA, FAC, NFFS	NC	[illegible]	[illegible], N.Y.	[illegible]
21	22	[illegible]	AMA, NFFS, SAM	NC	[illegible]	[illegible]	[illegible]
22	23	[illegible]	FAI	AC	[illegible]	[illegible]	[illegible]
25	26	[illegible]	AMA, NFFS, SAM, FAC	AC	FMR	Palm Bay, Fla.	[illegible]
28	30	[illegible]	AMA, NFFS, SAM, FAC	NC	[illegible]	[illegible], Ind.	[illegible]
29	30	[illegible]	AMA, SAM, NFFS	NC	[illegible]	[illegible]	[illegible]

September 2020

4	6	[illegible]	AMA, NFFS, FAC, SAM	NC	[illegible]	[illegible], N.Y.	[illegible]
5	6	Dynasty Cup FAI	FAI	AC	MMM	Denver, Colo.	Don DeLoach ddeloach@comcast.net 719-694-7117
6	7	54th Rocky Mountain Champs	AMA, NFFS, SAM, FAC	NC(E)	MMM	Denver, Colo.	Don DeLoach ddeloach@comcast.net 719-694-7117
6		Scale Staffel/Cruisers Indoor	FAC, AMA, FAI	NR	SS/SDC	San Diego, Calif.	George Mansfield [illegible]
6		TTOMR Monthly	AMA, FAC, SAM	NR	TTOMR	[illegible], Ga.	[illegible]
6		[illegible]	SAM, AMA, FAC, NFFS		MMAC	[illegible], Minn.	[illegible]
10	11	[illegible]	FAC, AMA	[illegible]	FAC	[illegible], Ind.	[illegible]
11		[illegible]	NFFS, AMA	NR	[illegible]	[illegible]	[illegible]
11	13	[illegible]	AMA, SAM, NFFS	NC	[illegible]	[illegible]	[illegible]
12		Skyscrapers Monthly	FAI, NFFS, AMA	NC	SSS	[illegible], N.Y.	D. Acken 914-[illegible] [illegible]
12	13	[illegible]	FAC	NR	[illegible]	[illegible], Ind.	[illegible]
15	18	SAM Championships	SAM, NFFS	NC	SAM	Muncie, Ind.	www.antiquemodeler.org
19		[illegible]	AMA, FAI, NFFS	NC	PMAC	[illegible], Ariz.	[illegible]
19	20	[illegible]	AMA, NFFS, FAI, SAM	AC, NC, TC	[illegible]	[illegible], Tex.	[illegible]
19	20	[illegible]	AMA, NFFS, SAM	NC	[illegible]	[illegible], Ind.	[illegible]
20		[illegible]	AMA, FAI, NFFS, SAM	NC	[illegible]	Denver, Colo.	[illegible]
22	23	[illegible]	AMA, NFFS, FAI, SAM	[illegible]	FMR	Palm Bay, Fla.	[illegible]

October 2020

2		[illegible]	NFFS, AMA	NR	[illegible]	[illegible]	[illegible]
2	4	Fall Annual	AMA, SAM, NFFS	NC	[illegible]	[illegible]	[illegible]
3	4	Scale [illegible]	FAC	NR	SS	[illegible], Calif.	George Mansfield [illegible]
3	4	[illegible] Championships	AMA, NFFS, SAM, FAC	NC	[illegible]	[illegible]	[illegible]
3	4	[illegible]	AMA, NFFS, SAM	NC	[illegible]	[illegible], Ind.	[illegible]
4		Scale Staffel/Cruisers Indoor	FAC, AMA, FAI	NR	SS/SDC	San Diego, Calif.	George Mansfield [illegible]
4		[illegible]	SAM, AMA, FAC, NFFS		MMAC	[illegible], Minn.	Gary Dahlen [illegible]
4		TTOMR Monthly	AMA, FAC, SAM	NR	TTOMR	[illegible], Ga.	[illegible]
8		Sierra Cup F1E	FAI	WC, AC	SCAT	Lost Hills, Calif.	M. McKeever 818-997-8475 vamckeever@aol.com
9	12	Sierra Cup	FAI	WC, AC	SCAT	Lost Hills, Calif.	M. McKeever 818-997-8475 vamckeever@aol.com
9	12	Kotuku Cup	FAI	WC, AC	SCAT	Lost Hills, Calif.	Brian Van Nest 760-873-5078 bisheaffla@aol.com
10		Skyscrapers Monthly	FAI, NFFS, AMA	NC	SSS	[illegible], N.Y.	D. Acken 914-[illegible] [illegible]
11		[illegible]	AMA, FAI, NFFS, SAM	NC	[illegible]	Denver, Colo.	[illegible]
17	18	[illegible]	FAI	AC	[illegible]	[illegible]	[illegible]
17	18	[illegible]	[illegible]	NC, TC	[illegible]	[illegible]	[illegible]
17	18	[illegible]	FAC	NR	FAC	[illegible]	[illegible]
18		PMAC Monthly	AMA, FAI, NFFS	NC	PMAC	[illegible], Ariz.	[illegible]
24	25	[illegible] Fall Annual	AMA, NFFS	NC	[illegible]	Lost Hills, Calif.	[illegible]

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Henry Toews (Ontario, Canada) built this nifty Cessna 140 during the Covid-19 lock-downs in March, 2020. (Contributed photo)