EL TORBELLINO

NEWSLETTER OF SAN DIEGO ORBITEERS FREE FLIGHT CLUB

APRIL 2014

The Prez's Corner *– Don Bartick*

All preparations are made for our trip to Lost Hills to compete in the annual San Valeers AMA & FAI contest 4/12-13.. Also sharing the venue is the SCAMPS and SCIFS conducting Old Time and Texaco events. This will give us an opportunity to promote the Dual-clubs FF Bonanza. Arline and I will be passing out flyers for the event. Should be a nice weekend.

The quarterly Board of Trustees met at Mike Pykelny's on March 20th. We welcomed Mike Jester as a new Board member. Still need 1 more. It was a productive meeting. The main issue was revisiting how we score points at the monthly Indoor and Outdoors contests. Look for the minutes in this issue so you can understand how we resolved this issue.

Final preparations have been made for the Dual-clubs FF Bonanza. The plaques and placards are ordered. New this year is a 8" round plaque to be given to each registered flyer. The Saturday noontime ice cream social and Saturday night food fest potluck dinner makes us stand out from the other contests during the year. I hope more Orbiteers make plans to attend this year.

The weather has cooperated very well for our outdoor monthly contests. Not one so far had to be cancelled. The competition has been keen. I've noticed larger participation in catapult glider. This is an easy event to fly. Power seems to attract no more the 3 participants. But it's still competitive. One gas job against 2 electrics. The gas job is still holding it's own.

This reminds me. There are 11 AMA rule change proposal being voted upon this year. Terry Kerger is District 10's representative to the rules board. He sent copies to several members of the FF community here in District 10 for comments. The main rule that was debated was the notorious elimination of the Builder of the Model (BOM) rule. Well this time out it was unanimous for the elimination of the BOM rule. The time has come that we need to be more interested in the survival of Free Flight then to be overly concerned about who built the plane. Regardless of the origin of the model, the flyer must still learn to fly the plane and then further trim to be competitive. Once the modeler has gotten FF in his/her veins, the building will follow.

Special congratulations to San Diego's Kang Lee for winning the 2014 F1D World Championships in Romania held at the famous Salt Mines. Kang made it to the world stage is just a few years after mentoring his daughter in Science Olympiad. Our beloved Orbiteers Cezar Banks chased this coveted award 8 times on the USA team, but never reached beyond silver. I'm sure Cezar played an important role guiding Kang.

Welcome Dick Woods as the next Life Member of the Orbiteers. He resides in Phoenix, Arizona. He makes it to every monthly Indoor contest. Flies outdoor F1B and F1G. Very competitive.

Remember: "Success is not a ladder you can climb with your hands in your pocket" - American Proverb.

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ORBITEERS MEMBERSHIP DUES

Annual Membership - $15
Lifetime Membership - $250
Non-Member Newsletter Subscription - $15
Junior Members 16 years old or younger - Free

Submit Dues to Club Treasurer:
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THE FINE PRINT THE FINE PRINT

El Torbellino is the official newsletter of the San Diego Orbiteers, an Academy of Model Aeronautics (AMA) Charter Club (#1113) and a California not for Profit Corporation. This newsletter is sent monthly to all paid members, selected exchange and magazine editors. Non-Members may subscribe at $15.00 per year within the U.S.A., offshore price will be adjusted to reflect the postage required. Materials from El Torbellino may be reproduced on an unlimited basis by other publications, but proper credit is requested.

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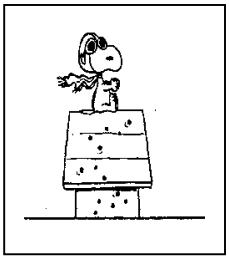


MONEY MATTERS - H.Haupt

03/12/14 thru 04/15/14

Income:

Dues (1) Life Member	250.00

Expenses:

March Newsletter	7.00
Board mntg. Food Expns.	25.00
Dual-Clubs Awrd. Depots.	400.00
Web Host Fees (2 yrs)	190.80

Current Balance …….. $ 957.80

San Diego Orbiteers Quarterly Board Meeting Minutes

March 19, 2014
Held at Mike and Linda Pykelny's home, with 10 in attendance, including:
Don and Arline Bartick, Mark Chomyn, Mike and Dorothy Jester, Linda and Mike Pykelny, John Hutchison and Kathleen McLaughlin, and John Merrill.

Many thanks to Linda, who graciously put on a Mexican feast!

Meeting called to order at 7:12 p.m.
Welcome to new board member Mike Jester.

The minutes of the previous board meeting were discussed. John H. made the motion to accept them as published, Mike P. seconded the motion, which passed unanimously.

Treasurer's Report: accepted as published.

Membership Report: Welcome to new members Mike Jester and William Scott.

Old Business:

1. Membership Campaign: Linda made up a flyer to be posted in hobby shops, which was very nicely done! Just needs a few additions and it will be all set to go out.
2. Recommendation for one additional Board Member: None were proposed.

New Business:

1. Revisit contest scoring: The motion was made, after much discussion, that for indoor and outdoor contests we will no longer stop at 7 points. Everyone that puts in at least one official flight will get one point (participation point) plus one point for each contestant they beat. The winner will get one additional Bonus point. The following is an example:

There are 5 contestants…….

Rank/Place	Points
1	6
2	4
3	3
4	2
5	1

The above motion was made by John H. with Mike J. seconding. Motion passed unanimously. A second motion was made by Mike J. to make the above point system retroactive to 1/1/14. John H. seconded. The motion passed unanimously.

2. Indoor and outdoor contest format: Considerable discussion ensued on this issue until John H. made the following motion: Limit all events to 3 flights. The exception is glider, which will remain the best 3 of 6 flights. Fly-offs can be decided by mutual agreement of the flyers and the C.D. Mike J. seconded the motion. The motion passed with 5 yes to 1 no vote.
3. (A) Open discussion for New Business: Mike P. wants to see us increase participation in the glider event at our monthly outdoor contests. Mike made the motion that the club sponsor a $25.00 cash award to the winner of the June 22nd outdoor contest in the glider (hand-launched and catapult) event, in addition to the normal fee distribution. Mike J. seconded the motion, which passed unanimously.
3. (B) Many thanks to Mike and Linda for their continued graciousness in bringing and cooking Hot Dogs and other goodies at our monthly outdoor contests. Please observe the tip jar, as this will help offset the costs involved in provided all the treats.
4. Schedule next Board Meeting: Mike Jester volunteered to host next meeting. It will be held Wednesday, June 25th, 2014 at his home.

Show and Tell: Mike P. showed us a new, high-tech Coupe, which is for sale. Contact Mike for more details.

Contest Reports: Don B. said that the Dual Club annual is ready to go. He got the sanction done online, and it was a very easy process. John H. talked about the July 4th contest at Otay. There has been a flyer in previous E.T. editions, and will surely be more reminders. There is also a big Scale Staffel contest (the first of 3 for 2014) to be held the weekend of April 12th and 13th.

BOARD MINUTES (March 19, 2014)
(Continued from previous page)

Open Discussion: John H. reported on an event he and several other modelers attended at Alliant University. The Orbiteers and Scale Staffel indoor flyers were welcomed to join the local Silent Electric Flyers Club as they fly indoor R.C. at the big gym there. The gym is huge, and well worth looking into for our own contests. William Scott made a contact at the university, and found it to be way too expensive for our use, but may be worthwhile for a large, national contest. If anyone is interested in flying indoor at Alliant, see the Silent Electric Flyer website (which features many of our members flying indoor among their own members).

Good of the Order: the Jester's daughter Julie is graduating from Cal-Tech in June. Julie is not only busy being a senior at school, but continues to be a Captain for Science Olympiad events. You may remember that in grade school here, she won many Sci-Oly events herself, which was most impressive.

Call for adjournment: The meeting was officially adjourned at 9:12 p.m.

Respectfully submitted by John R. Merrill, Secretary

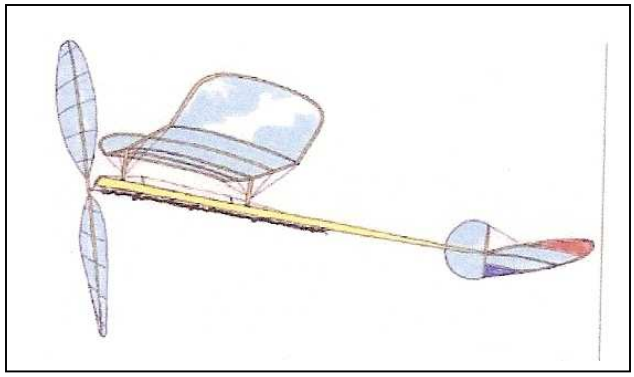
APRIL 6, 2014 INDOOR FLYING

A-6 (Scored 2 of 5 flights)

1.	Steve Shepersky	430
2.	Greg Hutchison	360
3.	Glen Marrpt	350
4.	Mike Jester	302
5.	Richard Wood	299
6.	Don Bartick	249
7.	Larry Miller	211
8.	John Hutchison	210

NO-CAL (Scored total of 3 flights)

1.	John Hutchison	271
2.	Mike Jester	244
3.	William Scott	108



ON THE LIGHTER SIDE - H.Haupt

Good news on the international front. Received the below message from Yuan Kang Lee. One of our own, from the San Diego modeling community, has done well.

To my San Diego friends,
I am happy to tell you that I came in first place in the F1D Indoor World Championship at the Slanic Prahova Salt Mine.

Brett Sanborn of the U.S. came in second and Ivan Treger of Slovakia was third. The United States team took first place with a record setting team score ahead of the favorite Romanian Team.

Final results and reports can be found here: *http://nffsblog.wordpress.com/*

The Rushbrooke Trophy, given to the individual world champion, will finally come home to San Diego.

Thank you for all of your support and friendship.
Sincerely,
- Kang

2014 ORBITEER FLYING SCHEDULE

Apr 27 - P-30, Power, & Glider

May 17/18 Dual Club FF Bonanza, Lost Hills CA

May Rotation Skipped: (Nos. Rubber)

June 22 - Coupe, Power, & Glider

July 4 - Walt Mooney Annual Scale Contest

July 20 - P-30, Power, & Glider

Aug 17 - Nos. Rubber, Power, & Glider

Aug 23/24 FAC Scale Contest, (Two of Three)*

Sept 21 - Coupe, Power, & Glider

Sept US FF Championships, Lost Hills

Oct 12 - P-30, Power, & Glider

Oct SW FAI Champs*, Boulder City, NV

Nov 8/9 FAC Scale Contest, (Three of Three)*

Nov 16 - Nos. Rubber, Power, & Glider

Dec 14 - Coupe, Power, & Glider

*** Non-Club Points Event**
Otay Field Weather (619) 661-8297

2014 INDOOR FLYING SCHEDULE

May 4 - Phantom Flash, No-Cal*

June 1 - Penny Plane, Phn. Flsh*, No-Cal*

July 6 - A-6, Phantom Flash*, No-Cal*

Aug 3 - Phantom Flash, No-Cal*

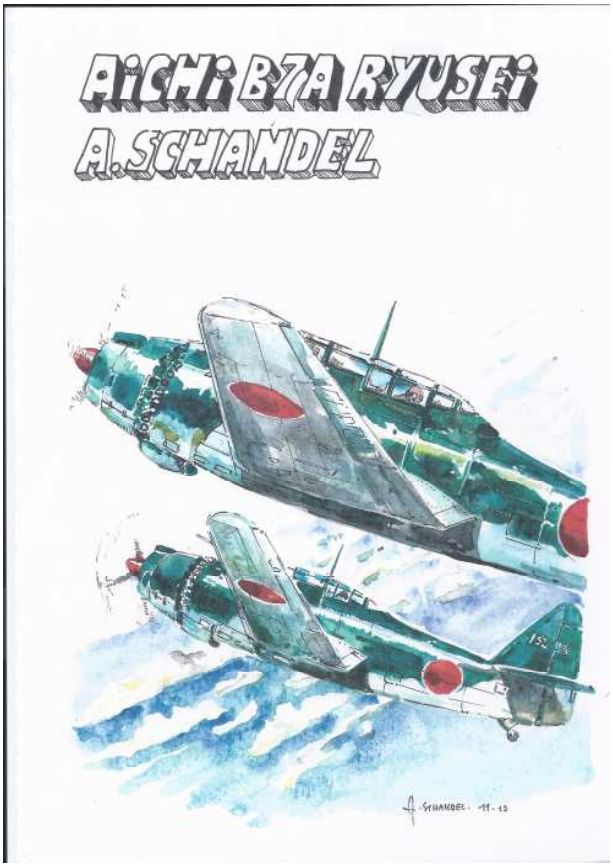
Sept 7 - Penny Plane, Phn. Flsh*, No-Cal*

Oct 5 - A-6, Phantom Flash*, No-Cal*

Nov 2 - Phantom Flash, No-Cal*

Dec 7 - Penny Plane, Phn. Flsh*, No-Cal*

***Non-ORBITEER Points Event**

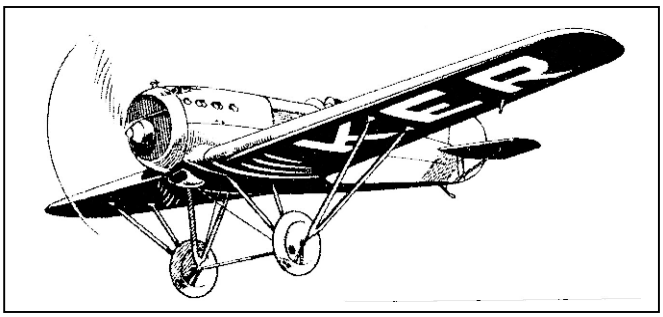


PROFILE SCALE CATAPULT GLIDER – hlh

Andre' Shandel of France has been sharing with us Catapult Profile Scale Glider designs over the past few months.

Attached to the email that brought you this newsletter, is a build plan for the AiCi B7-A1.

Take a look, read between the lines, of the French description and write up.



DUAL-CLUBS
FREE FLIGHT BONANZA

A National Cup Event

SAN DIEGO ORBITEERS 57th ANNUAL - CLASS AA, CATEGORY 2
SPONSOR OF AMA, CLASSIC & MINI-FAI EVENTS

*

FRESNO GAS MODEL CLUB 76th ANNUAL – CLASS AA, CATEGORY 2
SPONSOR OF NOSTALGIA, TEXACO & OLD TIME EVENTS

* MAY 17th & 18th 2014 *
* LOST HILLS, CA *

SATURDAY ONLY *7 AM – NOON, 1 - 5 PM* *LUNCH BREAK W/ ICE CREAM SOCIAL*	*EITHER DAY* *MUST FINISH EVENT THE SAME DAY*		*SUNDAY ONLY* *7 AM – 3 PM*
½ A GAS (1)	SMALL OT RUBBER STICK	EARLY ½ A NOS.	FIJ/F1P (POWER)
C/D GAS	SMALL OT RUBBER CABIN	.020 REPLICA	FIG (COUPE)
P-30 (1)	LARGE OT RUBBER STICK	A PYLON	F1H (TOWLINE)
VINTAGE FAI POWER	LARGE OT RUBBER CABIN	B-C PYLON	A GAS
CATAPULT GLIDER (1)	¼ A NOSTALGIA	A FUSELAGE	B GAS
½ A TEXACO	½ A NOSTALGIA	B-C FUSELAGE	HAND LAUNCH GLIDER (1)
DAWN P-30	A NOSTALGIA	RUB/WAKEFIELD NOS	FULL SIZE TEXACO
NIGHT GAS (COMBINED)	B NOSTALGIA	CLASSIC TOWLINE	MULVIHILL
	C NOSTALGIA	½ A CLASSIC POWER	DAWN MULVIHILL
	TOMBOY	E-36/A/B ELECTRIC (COMBINED)	GOLLYWOCK MASS LAUNCH
	TOM CARMAN MEMORIAL (2)	BILL BOOTH, SR MEMORIAL	

(1) Junior & Senior/Open Event *(2) Cash Awards* *See Special Instructions on backside*

*** AN ORBITEER TRADITION LIVES ON ***

JOIN US FOR SATURDAY ICE CREAM SUNDAE SOCIAL ON US (NOON – 1 PM)
also

SATURDAY NIGHT FOOD FEST POTLUCK ORGANIZED BY DAN HEINRICH (5:30 -7:00 PM)

(Main course provided)(Bring a side dish or dessert)(Let Dan know what you're bringing at aeronutd@cs.com)

AWARDS FOR FIRST 3 PLACES (except as noted)
Ceremonies at: 5:15 PM Saturday
3:15 PM Sunday

$15 REGISTRATION Sr. & Open / $2 Jr
$5 per Event Sr. & Open / $1 Junior -
Optional: $35 for Registration & Unlimited Events

For Information Contact:

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LOST HILLS MODEL AIRFIELD ASSOCIATION CARD REQUIRED ($20 AT FIELD TO Join)

SPECIAL INSTRUCTIONS

SATURDAY NOON to 1 PM LUNCH BREAK & SUNDAE SOCIAL

The contest will be suspended for 1 hour for lunch and the San Diego Orbiteers famous ice cream social. This is a great time to relax, cool off, have lunch and enjoy the ice cream sundaes. We will provide ice cream, & sundae fixings, napkins, plates and plastic ware.

PRIZE DRAWING

The Fresno GMC once again has collected an enormous amount of model stuff for their drawing. For up to 3 events entered that are sponsored by them, the contestant will receive a drawing ticket. Drawing to be held right after Sunday's award ceremony.

TOM CARMAN MEMORIAL

Any size Texan or Spacer. If Nostalgia legal, must fly by Nostalgia rules. If AMA legal, must fly by AMA rules. No entry fee. Event runs both days, but must be finished on the day started. Must sign up for the event. Special cards will be provided. Cash prizes 1st thru 3rd place: $50, $25 & $15. Event sponsor is Jim Hurst. Questions: contact Jim at 310-324-5425.

BILL BOOTH, SR. MEMORIAL

High time in Old Time Gas. Includes 020 Replica, but not Texaco. Winner will receive a special award from the Fresno GMC.

HAND LAUNCH GLIDER & CATAPULT GLIDER

Hand Launch Glider & Catapult Glider will to be launched from an established glider pen on the field. Max's are 120 seconds and all flights count.

NIGHT GAS FLYING

All engine classes combined. Event window between 6pm – 9pm. Engine runs in accordance with aircraft classification; i.e., AMA or Nostalgia.

TOMBOY

3cc fuel. Must ROG. Timer must stay within 200 ft. of launch. Best time out of unlimited flights between the contest hours .

MINI FAI EVENTS ***Low stress format***

F1G, F1H, F1J/P: ***First five (5) flights must be flown from the established line between 7:00 – 12:00 AM. 120 sec max***

Fly-off in **½ hour rounds** starting at 1:00 PM. 15min rounds in sequence. 15min between end of round and beginning of next one. Fly-off round max: 1st 150sec, 2nd 180sec, 3rd 210sec, 4th 240sec, 5th 300sec, 6th 360sec and so on. Fly-off rounds may be compressed by consensus of the participants and the CD.

VINTAGE FAI POWER ***Low stress format***

For rules, please go to this website: ***http://faipower.com/vintage-fai-power.htm.*** A copy of the rules will be available at the CD's table. ***First five (5) flights must be flown from the established line between 7:00 – 12:00 AM.***

DAWN P-30

Saturday morning 7:30 AM sharp. Mass launch from glider pen; 1 flight, no max.

DAWN MULVIHILL (Timer can ride with contestant)

Sunday morning 7:30 – 7:50 AM launch window, 1 flight, no max.

TEXACO (Timer can ride with contestant)

1/2A Texaco: Saturday 7:00-10:00 AM launch window, 8cc fuel; Full Size Texaco: Sunday 6:00-10:00 AM launch window, 1/4oz per pound – max 1.75oz fuel.

Gollywock Mass Launch

Sunday morning at 8:00 sharp. Mass launch from glider pen; 1 flight, no max.

Shape Shift

Fuel costs and logistics burden spur efforts to design dramatically more efficient military transport aircraft

Graham Warwick Washington

Traditionally, performance drives military-aircraft design decisions and the energy implications of those choices are secondary. But as fuel costs eat into reduced budgets, the balance is shifting. Energy is fast becoming a critical constraint on operations, and the results could reshape aircraft design.

For now, the U.S. Air Force's efforts to cut fuel bills are focused on its transport and tanker fleet, which consumes two-thirds of the aviation fuel the service burns each year. While near-term retrofits—such as formation flying, winglets and other drag-reduction devices—can reduce the fuel consumption of existing aircraft, they will not provide the scale of savings sought in the long term.

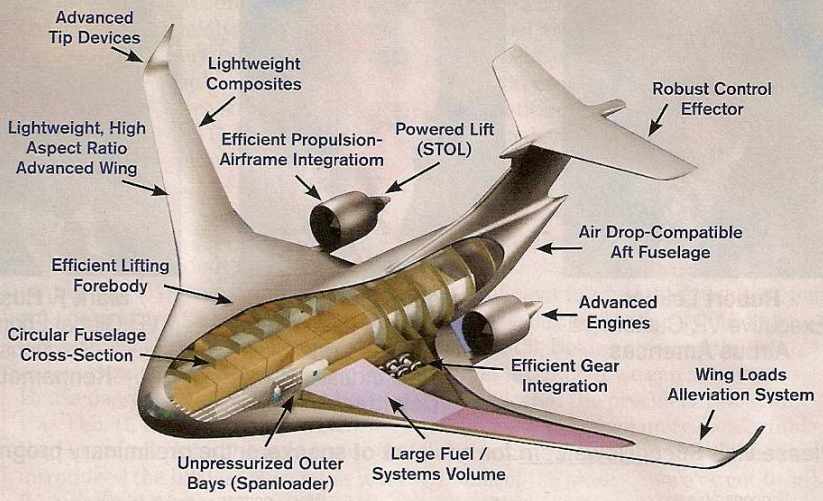
The name of the Air Force Research Laboratory's (AFRL) Revolutionary Configurations for Energy Efficiency (RCEE) program says it all: Dramatic changes in aircraft design may be required to achieve significant reductions in fuel consumption.

The goal of RCEE Phase 1, which ran from 2009-11, was to define a next-generation mobility fleet that would use 90% less fuel than today's transports and tankers. Under Phase 2, which began in 2011 and will run until 2015, companies are taking a closer look at specific configurations.

In Phase 1, Boeing defined a mixed fleet that met the 90% savings target: an all-electric truss-braced-wing design with 20-metric-ton payload; a 40-ton-payload distributed-thrust hybrid-electric design; and a 100-ton payload hybrid-electric blended wing-body (BWB). In Phase 2, the company is taking a closer look at the distributed-thrust, hybrid-propulsion design.

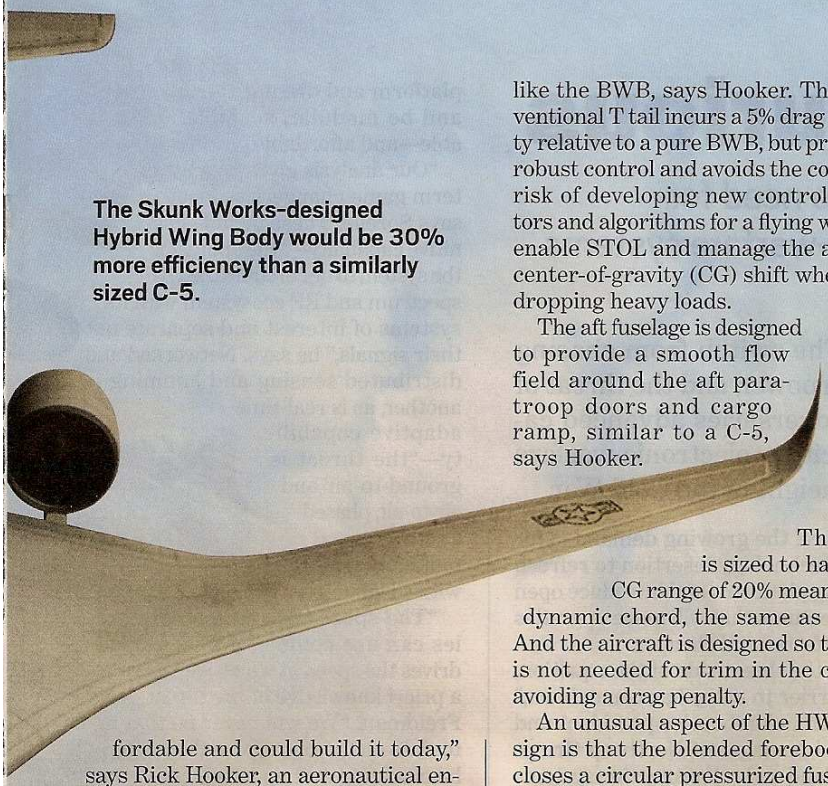
Lockheed Martin, meanwhile, studied a wide range of configurations and technologies in Phase 1 in search of the 90% goal, concluding a hybrid wing-body (HWB) offers the most potential. In Phase 2, the company is further refining the concept, which combines a blended wing and forebody for aerodynamic and structural efficiency with a conventional aft fuselage and tail for compatibility with current airlift missions, including airdrop.

The twin-engine HWB is designed to take off in less than 6,500 ft. and fly 3,200 nm carrying 220,000 lb. of payload, including all the outsize cargo now airlifted by the Lockheed C-5. Lockheed calculates the aircraft will burn 70% less fuel than the Boeing C-17 through a combination of better aerodynamics, newer engines and lighter structures. "We use mature technologies to be af-



The aerodynamic and structurally efficient blended forebody encloses a lighter, circular, pressurized fuselage.

LOCKHEED MARTIN CONCEPTS



The Skunk Works-designed Hybrid Wing Body would be 30% more efficiency than a similarly sized C-5.

fordable and could build it today," says Rick Hooker, an aeronautical engineer at Lockheed Martin Aeronautics

The HWB study is marked by a high degree of aerodynamic optimization using computational fluid dynamics (CFD) tools not available when today's airlift fleet of C-17s and Lockheed C-130s and C-5s was designed. Starting with a cruise Mach number of 0.7 as originally lofted, extensive shape optimization using CFD increased cruise speed to Mach 0.81 and reduced transonic drag by 45%, says Lockheed aeronautical engineer Andrew Wick.

Lockheed estimates the aircraft is 65% more aerodynamically efficient than the C-17, which is penalized by its 1980s design and the requirement for short-takeoff-and-landing (STOL) capability. The HWB is 30% more efficient than a C-5, and Lockheed says it is even able to achieve an aerodynamic efficiency 5% better than the Boeing 787, albeit at a lower Mach number.

That efficiency comes from several sources. To start, the blended forward fuselage carries 25% of the lift and moves the wing roots outboard, extending span and reducing drag without increasing wing weight. The spanwise lift distribution is improved and wing aspect ratio increased to 12 for the weight of a conventional aspect-ratio 9 wing,

The aft fuselage, meanwhile, ensures the aircraft is compatible with current loading and airdrop operations—a challenge for pure flying-wing designs like the BWB, says Hooker. The conventional T tail incurs a 5% drag penalty relative to a pure BWB, but provides robust control and avoids the cost and risk of developing new control effectors and algorithms for a flying wing to enable STOL and manage the abrupt center-of-gravity (CG) shift when air-dropping heavy loads.

The aft fuselage is designed to provide a smooth flow field around the aft paratroop doors and cargo ramp, similar to a C-5, says Hooker.

The tail is sized to handle a CG range of 20% mean aerodynamic chord, the same as a C-5. And the aircraft is designed so the tail is not needed for trim in the cruise, avoiding a drag penalty.

An unusual aspect of the HWB design is that the blended forebody encloses a circular pressurized fuselage. Some cargo is carried in unpressurized outer bays—pallets are loaded via the rear ramp, moved forward on floor rollers, then sideways through fuselage doors and into the outer bays on ball mats. The result is a pressurized fuselage that is smaller and lighter than the C-5's despite the similar cargo capacity. Lockheed calculates the HWB's structure is 18% lighter than a conventional design.

Another unconventional element of the configuration is the engine location above the wing trailing edge. Over-wing nacelles have long been avoided in aircraft design because of adverse transonic interference with the wing, but careful optimization by Honda of the engine location on the HondaJet has given the configuration new credibility.

Lockheed studied cruise interference drag with engines mounted in several locations—under and over the wing leading edge, over the trailing edge and on the aft fuselage—and generated more than 15,000 Navier-Stokes CFD solutions. The results showed that mounting the nacelles over the inboard trailing edge improved lift-to-drag ratio, regardless of engine type, for an aerodynamic benefit of up to 5% over a conventional under-wing location.

Three potential powerplants have been identified. General Electric's GEnx is available today, providing a 25% reduction in specific fuel consumption (sfc) over the C-17 and C-5M engines. Rolls-Royce's conceptual Ultra Fan has a 30% lower sfc and could be available by 2030. Third is a GE open rotor that could be available after 2025 with a 35% lower sfc. Combined with the improved aerodynamic efficiency and lighter weight, lower sfc results in the HWB burning 70% less fuel than a C-17 with GEnx engines, 75% with Ultra Fans and 80% with open rotors, Lockheed calculates.

Interestingly, despite diameters ranging from the GEnx's 11.8 ft. to an open rotor's 21 ft., "the wing optimized out to the same shape for all three engines," says Wick. "The same wing for all three allows the engine installation to be modular. We could build it today and it would be designed to be able to be reengined."

Analysis showed the over-wing installation offers other benefits, he says. The long wing chord ahead of the nacelle acts as a flow straightener to reduce inlet distortion and also shields fan noise from the ground. The overhang from the trailing edge means the engine is still accessible for maintenance and removal. And a smaller tail is possible with over-wing engines, says Hooker.

There is a powered-lift benefit from placing the engine nacelles over the trailing edge of the wing. "The inlet flow provides a large amount of suction lift on the wing," says Hooker. This has a similar effect to the high-pressure area generated by under-wing engines blowing over deflected flaps, as happens in the C-17, and allows the over-wing engines to achieve a similar 15% increase in maximum lift coefficient.

To provide STOL capability, excess fuel volume could be traded for flap blowing to create a circulation-control wing, as in the STOL airlifter concept developed by Lockheed for AFRL's Speed Agile program. Another possibility is deflecting thrust downward, using flaps aft of the engine, core flow vectoring with an F-35B-style swiveling nozzle, or rotating the engines when the flaps deploy, "so they go along for the ride," Hooker says.

Although RCEE is just a study effort, the Air Force will have to begin work on its next strategic airlifter in the near future if the C-17 is to be retired as planned starting in 2033. Noting it took 21 years to field the C-17, Hooker says ,"We need to start today to avoid a future gap."

SAN DIEGO ORBITEERS
Howard L. Haupt / Editor
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San Diego, California 92117-4266

WHAT'S HAPPENING - APRIL 2014

Apr. 27 - **Orbiteer Outdoor Monthly**, Otay Mesa, 8:00 am,
Feature Event: P-30 Other Events: Power & Glider

MAY 2014

May 4 - **Indoor Flying**, Grossmont College (Upper Gym), 7:30 am to 11:30 am.
Feature Event: Phantom Flash Other Events: No-Cal

May 17/18 **DUAL-CLUBS FREE FLIGHT BONANZA**, Lost Hills CA.
San Diego Orbiteers 57TH Annual Constest, (See enclosed flyer for details)