AIAA Newsletter
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Development of Helicopter Tailboom Strakes

Tim Sestak
Military Programs Director Boundary Layer Research, Everett Washington

Helicopters are frequently tasked to operate in flight regimes that take them to the edge of their safe operational envelope at "worst case" conditions of high altitude and extreme heat and humidity. These environments produce high density-altitude conditions that severely degrade helicopter aerodynamic performance. Missions under these conditions easily reach the altitude and load carrying limits of the helicopters and may also reach the limits of control effectiveness which can lead to loss of control. The need for performance improvement in the fleet of helicopters is well recognized.

Tailboom strakes increase the performance of a helicopter by changing airflow around the tail boom of the helicopter. Unmodified helicopter tailbooms generate a fluctuating adverse pressure zone that increases tail rotor demand, decreases available power and induces destabilizing turbulence.

Tailboom strake installation can be accomplished with common hand tools resulting in a permanent, near maintenance free modification. Tailboom Strakes offer a high-quality, low-cost, permanent improvement that immediately enhances baseline and upgraded helicopters. Tailboom strakes also increase the cost efficiency of engine and rotor upgrades to legacy helicopters because they continue to provide improved airflow and actually increase in effectiveness at higher payloads and increased rotor wash speeds.

After extensive NASA, FAA and private development, this patented technology is Federal Aviation Administration Certified on several helicopter models and is a completely mature technology. The technology provides immediate and exceptional cost, operational and safety returns in peacetime as well as combat. It also provides increased altitude and payload performance and works best where needed most, at heavy weights and hot and high conditions.

Tim Sestak, is a graduate of the Naval Postgraduate School and Naval War College. He has 20 years of experience as US Naval Aviator flying anti-submarine warfare helicopters. He has served as a primary flight instructor (fixed wing), Aeronautical Engineering Duty Officer (AEDO), Vertical Flight Program Director at Naval Air Development Center and New Program Development Officer for Air Vehicle and Crew Systems Department at Naval Air Warfare Center, Aircraft Division. After retiring from the US Navy, he has worked as the Program Management Contractor for NASA Advanced General Aviation Transportation Experiment "AGATE" Program, and as a Senior Systems Engineer at Boeing on the 747X, 767-200ER projects, Joint Strike Fighter Proposal, F-22 Project and Maritime Patrol Helicopter Proposal. Since 2003, Tim has been employed at Boundary Layer Research as the Military Programs Director.
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Joint AIAA/SFTE Lecture - Dinner Meeting

Date: **Tuesday, November 16**, 2004
Place: Old Spaghetti Factory 2801 Elliott Ave, Seattle, WA 98121
Time: 6:00 PM Social, No-Host Bar
6:30 PM Dinner–(lasagna, spaghetti or chicken caesar salad)
7:00 PM Program
Dinner Price:
$15 AIAA/SFTE Members and Guests
$18 Non-Members
$5 Students and Educator Associates
Program Only: **$5** (Free for persons 17 and under)

Please Note: New Signup Options via our new website
AIAA Sign up online at http://www.pnwaiaa.org -> reservations
Or send email to reservations@pnwaiaa.org (including meal choice)
You will receive a confirmation e-mail.
Or call **David Lednicer at (425) 643-9090**
SFTE Mike Bartlett – michael.f.bartlett@boeing.com
Please make reservations by Friday, November 12th
A reservation is a commitment to pay!

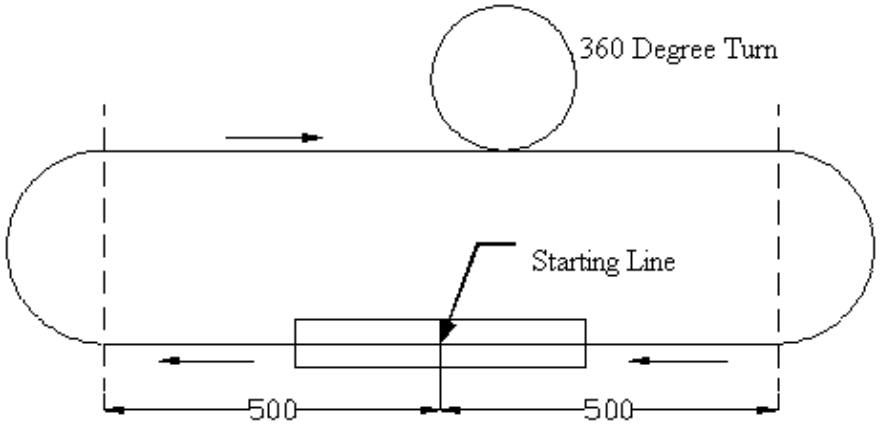
UW AIAA Design/Build/Fly

Report from University of Washington Aeronautics and Astronautics

Well, school is back in full swing now, and a group of students from the UW Department of Aeronautics have decided to partake in the national AIAA Design/Build/Fly (DBF) contest for this year. The design team for the UW is composed of a group of seniors and juniors in the Aero department who are extremely excited to be building a unique radio-controlled airplane.

Held in St. Inigos, MD, the contest is both a unique and challenging task for the students. It is unique in the fact that this is the first contest for many, and challenging in the fact that an actual airplane has to be built and designed from the ground up. Among the challenge of building the airplane comes with the large task of fundraising to pay for building materials, testing, and traveling.

Each year, the contest provides interesting challenges to be met. As designated by the AIAA, the aircraft must be an electric powered and fixed wing aircraft which can support three pound payloads near the wingtips and internally. This year, there are three different mission profiles to be accomplished. The first involves flying the closed loop course shown, with the payloads attached at the wingtip. Once a lap is completed, the payloads are dropped off at individual locations. The second mission has the aircraft storing the payloads internally and flying the course while the third and final mission is to fly as many laps as possible. After each mission, the airplane must be disassembled to fit into a box of size 2' x 1' x 4' (WxHxL). Speed is important in each mission as the time to completion factors into the score.



Course Layout
Shown to Scale

Currently the students have been going through a conceptual design phase. Several different approaches have been analyzed, including a standard wing-tail combination, a bi-wing with merged wingtips configuration, and a ½ aspect ratio flying wing configuration. In fact, a ½ aspect ratio flying wing was put through proof of design testing with moderate success. However, the design team is now leaning towards a more conventional wing-tail combination aircraft. The team hopes to have a final conceptual design by the end of the year, and begin construction in January. Through a grant from the Ford Company, the students are even going to perform some wind tunnel testing to help ensure stability of their aircraft

This contest is a wonderful learning experience for the students. By designing, building and flying a unique aircraft, they will learn many of the skills necessary for entrance into industry. Down the road, they will encounter many obstacles, which will be overcome through methodical problem solving. They are being advised by Scott Eberhardt, a professor in the Aeronautics Department. Wish the team good luck, and if you have any questions or feedback, please direct them to Eric Bahor at bahor@aa.washington.edu or Toru Yamasaki at trymask@aa.washington.edu .

Dinner Meeting and Lecture

November 16, 2004 Dinner Meeting	
Topic:	
Date/Time:	.6:00 social; 7:00 presentation
Location:	The Old Spaghetti Factory, 2801 Elliott Ave, Seattle

Retired Members Brunch

November 20th	
Speaker:	The X-Prize with Billy Roeseler
Date/Time:	November 20th, 9:00AM
Location	Museum of Flight, Seattle
Contact	Tom Holgate 253-838-0333

Chair's Corner

I write this the day after our first dinner meeting of the year. Many thanks to Professors Adam Bruckner and Scott Eberhardt and A&A Masters grad Jon Lee for an excellent job of walking through the history of the A&A department at the UW. As noted last month, we have a whole new website and much improved mailing list support. I was amazed at how fast we were able to get everything running. We did experience a glitch or two, and we may yet experience more, so bear with us.

One change we are making starting with this newsletter is that we will not be emailing the pdf file of the print version of the newsletter. This keeps the email size quite small. I strongly encourage any of you still receiving the paper copy to switch to email if at all practical, as the cost of the paper copies is still quite substantial. The web signup for dinner meetings was a hit, so as we progress, please feel free to suggest improvements and enhancements. All suggestions will be carefully considered.

As you will see elsewhere the senior class is participating in the Design, Build, Fly competition sponsored by three AIAA Technical Committees (Flight Test, Applied Aerodynamics and Aircraft Design). The students have some funding in place but still need about $3,000 to ensure they can get everyone to Maryland for the fly off in April. The local council will be helping them to find corporate donations, but if any individuals feel inspired to help out, donations can be sent to:

AIAA Student Chapter
University of Washington , Box 352400
Seattle, WA 98195-2400

Checks should be made out to: **University of Washington/AIAA** (Make sure to put Design/Build/Fly Competition in the remarks section of the check). These donations are tax deductible. I hope to see you all soon at an AIAA event.

Regards, Dave Paisley AIAA PNW Section Chair

Retiree Brunch Presents:
The X-Prize
With Billy Roeseler, The Boeing Company
November 20th Museum of Flight 9:00 – 11:00 a.m.

The retiree brunch features Billy Roeseler to discuss the X-prize; the challenge and the approaches the various teams used. Billy will use tables and illustrations to show the relative merits of the various approaches, including the V-2 style rocket, the air launch cylinder (SRAM), and the various winged vehicles. We will celebrate the success of the Rutan/Allen/Melville/Binnie team and also speculate about the impact that these civilian space flights may have on space tourism and other growth markets. A chance that Erik Lindbergh may join Billy in this discussion.
$17 per person, advance notice necessary.

The Royal Aeronautical Society - Seattle Branch

Third Annual "Joe Sutter" Black Tie Dinner Lecture
Museum of Flight in the Great Gallery
6:00 pm Saturday, November 20th, 2004
Speaker: Sir Ralph Robins, former chairman of Rolls-Royce. "Striving for Perfection."

Tickets are US$110 (US$95 for Museum of Flight or RAeS members). Please send your check payable to:

RAeS Seattle Branch
c/o Yvonne Aleson
P.O.Box 3707, M/C 0C-83
Seattle, WA 98124

Contact Yvonne (425-342-5330) if you have any questions.

Section website: http://www.pnwaiaa.org/
National website: http://www.aiaa.org

Please submit newsletter materials to the editor by the 22nd of December for the January Newsletter.

Outstanding Section Awards
1972-1973
1977-1978
1978-1979
1991-1992
1993-1994
1994-1995

Section Special Event Awards
1976-1977
1977-1987
1978-1979
1982-1983
1987-1988

Membership Award
1997-1998

Young Member Activity Awards
1990-1991
1991-1992
1994-1995
1995-1996

Career Enhancement Award
1997-1998

Newsletter Awards
1994-1995
1995-1996
1996-1997

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Elected, non-voting				
Vice-Chairman-Elect	Paul Bolds-Moorehead	67-65	425-237-5176	paul.j.bolds-moorehead@boeing.com
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Appointed				
Webmaster	Jane Kuta	8A-94	253-773-5759	jane.f.kuta@boeing.com
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Retired Members	Tom Holgate	2704 SW 314th, Federal Way, WA 98023-7842	253-838-0333	holgatz@aol.com
Newsletter	Open			
Nominations	Vera Martinovich	02-XJ	425-266-8664	vera.a.martinovich@boeing.com
Museum of Flight Liaison	Open			
Pre-College Outreach	Scott Eberhardt	P.O. Box 352400, UW, Seattle, WA 98195	206-543-6508	scott@aa.washington.edu
Public Policy	Karl D'Ambrosio	5026 18th Avenue NE, Seattle, WA 98105	253-395-3710	karld@emfcowa.com
Young Professionals	Emmanuel Domingo	2779 NE Liberty, Gresham, OR 97030	206 227-7819	E_domingo@hotmail.com

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