

AIAA SAN FRANCISCO SECTION



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AMERICAN INSTITUTE OF AERONAUTICS AND ASTRONAUTICS SAN FRANCISCO SECTION
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Top: Boeing B-52G Stratofortress. Above: Boeing B-52D. Note difference in vertical stabilizer. Photos from USAF Museum.

Thursday, January 22, 2003
Ramada Inn, Sunnyvale, CA

Boeing's Magnificent B-52 Stratofortress Bomber

Larry Rinek
Aviation Historian

The impressive USAF Boeing B-52 Stratofortress jet bomber, was considered quite advanced when entering SAC wing service in June 1955, and amazingly continues in front-line combat service to this day--almost 50 years later. The B-52 is expected by the Air Force to be able to serve until 2045 (90 years), easily the best longevity of any jet warbird ever built. Affectionately known to its aircrews as the "BUFF", the B-52 has made legendary contributions to military aviation history. Conceived as a replacement for the huge and relatively slow Convair B-36, the B-52 originally served on alert as our front-line intercontinental strategic nuclear heavyweight bomber. In the early 1960s, The high-altitude B-52 nuclear mission profile was changed to low-altitude penetration (with upgraded electronic countermeasures and instruments), in response to better Soviet missile defenses.

Later, the B-52 served America well in conventional combat bombing roles in Southeast Asia, Gulf War I, southern Iraq, Yugoslavia (Serbia/Kosovo), Afghanistan, and Gulf War II (Iraq) cam-

Boeing B-52 Stratofortress, continued on page 2

Thursday, February 26, 2004
Ramada Inn, Sunnyvale, CA

A Status Report on the Airborne Laser Program

How close are we to defending our allies and ourselves at the speed of light against unfriendly nation missiles?

Dr. Kenneth W. Billman
Lockheed Martin Space Systems Co.
Missile Defense Systems
Sunnyvale, CA

The Missile Defense Agency, with U.S. Air Force management, is preparing the Airborne Laser (ABL) for demonstration of a missile kill in late 2004. ABL is a modified Boeing 747-400F aircraft with a multi-megawatt chemical oxygen-iodine laser (COIL) and a beam control system to acquire and track the missile-and to hold the beam on the missile until it is disabled. The ABL Team is bringing together components for final test and installation: Boeing is providing Battle Management, Aircraft and System Integration and Test; Lockheed Martin provides Beam Control and Fire Control; and Northrop Grumman, the COIL. Dr. Billman will discuss the ABL program's rationale, history, current status and future outlook.

About the speaker

Dr. Kenneth Billman began his career in the 1950s as a chemist at a Kentucky brewery. A few years and a few degrees later he was a professor of physics at Massachusetts Institute of Technology.

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NOTE: this newsletter and many back issues are available in PDF form at: <http://www.aiaa-sf.org/newsletter>

paigns. A key to the B-52's continuing useful service has been its multirole flexibility in delivering a wide variety of modern offensive weapons, including GPS/precision-guided "smart bombs" (JDAMs), and air-launched cruise missiles (ALCMs) for stand-off attacks, with both conventional and nuclear warheads.

Relatively large with a 185 ft. wing span, the B-52 is the heaviest (488,000 lb. GTOW) of the 3 remaining dedicated bomber aircraft in the dwindling USAF active bomber inventory. Many of the technology innovations pioneered by Boeing in the B-47 Stratojet swept-wing jet bomber program carried over to the Stratofortress, with further improvements. Altogether, 744 B-52 airframes were built, including the prototypes and production models A through H. Today, just the H models (approximately 76 out of the surviving fleet of 94) remain active in the USAF, divided between Barksdale AFB (Louisiana) and Minot AFB (North Dakota).

About the Speaker

Larry Rinek began his lengthy career in the Southern California aerospace industry, and worked for NASA's Jet Propulsion Lab, Menasco's Burbank aircraft landing gear plant, and the USAF in El Segundo. Later, at SRI International (the former Stanford Research Institute) and on behalf of the Stanford Transportation Group consultancy in Northern California, he performed many business and technology studies for aerospace clients over a 25+ year period. Since 1998, Larry has been Frost & Sullivan's Director of Consulting in Northern California, working with a variety of industries.

Larry has an MBA in Marketing, and a BS degree in Industrial Engineering from the UCLA. He is an active member of AIAA, SAE, SAE's Historical Committee, the American Aviation Historical Society (AAHS), and the Aircraft Engine Historical Society (AEHS). Mr. Rinek is a well-recognized aviation historian, author, and speaker. He places research emphasis on U.S. technology innovation, particularly in aero-propulsion, and recently in Air Force bombers. He has authored 15 scholarly publications (many concerning the early development of American aviation), including 6 published by the SAE. Larry was a former student pilot, and soloed many times in the classic Piper J-3 Cub.

AIAA to Honor Fellows and Honorary Fellows for 2004

AIAA will honor 34 key figures in the aerospace industry at the International Air & Space Symposium, April 19-21, 2004, in Washington, D.C. Among them are two members of the San Francisco Section: **L. S. "Skip" Fletcher**, elected as an Honorary Fellow, and **Thomas Edwards**, elected as a Fellow.

Honorary Fellows — the highest honor bestowed by the Institute — are elected yearly for their outstanding contributions to the industry. The four AIAA Honorary Fellows for 2004 are:

Pierre Bégin, SNECMA

Earl Dowell, Duke University

L. S. "Skip" Fletcher, NASA Ames Research Center

Peter Teets, Undersecretary of the Air Force

Fellow selection is limited to candidates demonstrating strong potential for leadership and distinguishing themselves in the field of aerospace. One Fellow is selected for every 1000 voting members of the Institute. Many of this year's Fellows are from Region VI, the AIAA Western Region. The AIAA Region VI Fellows for 2004 are:

Sam Ahn, AHNTECH, Inc., San Diego Section

Philip Cassady, Boeing Phantom Works, Pacific Northwest Section

Jack Cherne, Northrop Grumman Corporation, Los Angeles Section

Thomas Edwards, NASA Ames Research Center, San Francisco Section

Hans Hornung, California Institute of Technology, San Gabriel Valley Section

Ann Karagozian, University of California, Los Angeles Section

Hung Ban Tran, The Boeing Company, Orange County Section

James Wertz, Microcosm, Los Angeles Section

Short Notes

- **Congressional Visits Day** this year will coincide with the *AIAA International Air & Space Symposium* in Washington D.C., April 19-21, 2004. The program brings AIAA members to Washington to talk with their representatives in Congress and congressional staff. More info can be found on-line at <http://www.airandspaceforum.com>
- The **Fermented Fluid Mechanics Forum** (FFMF) has been bringing young professionals, students, and veteran aerospace professionals together. Many informal stories are told over fermented fluids as well as carbonated ones. Lately, AIAA SF has joined with other technical societies on special topics. Check the schedule at <http://www.aiaa-sf.org/ffmf.html>.
- Applications for **Galileo Memorial Scholarships** will be accepted shortly. It was established in 1973 by NASA Ames and the AIAA San Francisco Section, is a memorial to the men who perished in the Galileo I aircraft accident on April 12, 1973. The Galileo I was a Convair 990, which was operated by Ames as an airborne laboratory for research in aeronautics, astronautics, astronomy, and earth observations. The scholarship is open to graduating high school seniors who reside in the counties served by the AIAA San Francisco Section, or are children of NASA Ames employees, retirees, and on-site contractors. Details will be posted at <http://www.aiaa-sf.org/pco/Galileo/2004/announce.html>.

Engineer of the Year Nominations

Each year the AIAA San Francisco Section honors a few Bay Area residents as Engineers of the Year. Awards may be made in up to seven disciplinary categories, in recognition of the diversity of talent and accomplishments among engineers in the area. Nominations are solicited from the membership at large, but nominators and nominees are not required to be AIAA members. Please send (or e-mail) the completed nominations forms by May 3, 2004 to:

Dr. G. R. Srinivasan
 Group Lead, CFD and Advanced Aerodynamics
 Lockheed Martin Space Systems Company
 Org. L2-70, B157, 5J5
 1111 Lockheed Martin Way
 Sunnyvale, CA 94089
 e-mail: honors@aiaa-sf.org, g.r.srinivasan@lmco.com

The following information must be attached on a separate sheet of paper to the form below:

- Proposed Citation (Write a brief statement of the individual's contributions)
- Basis of the Nomination (Write a brief paragraph assessing the significance of the contributions. Include a list of publications and patents, etc.)
- Background (Education and employment)
- Nominator (Include name, address, daytime telephone, and e-mail address)

Nomination for Engineer of the Year

Category (circle one)

Aeronautics	Astronautics	Engineering Design
Engineering Educator	Information Systems	Project Management
Young Engineer		

Nominee

Name	
Position	
Organization	
Address	

Airborne Laser Program, continued from page 1

He then moved to NASA, where he managed the high-power laser program and advanced space power systems group while at NASA Ames Research Center. At Electric Power Research Institute (EPRI) he managed the (laser) Inertial Fusion Program. As Director of TITAN Systems' San Francisco Bay Area Photonics Office he developed a three-color laser transmitter for the Space Shuttle's LITE program, worked on the DARPA 100-kW Space Power System, and with submarine laser communications.

In 1989 Dr. Billman joined Lockheed Martin in Sunnyvale and has served as Chief Scientist or Program Manager for many of their major directed energy programs. During the initial Airborne Laser program he was program manager and technical lead, leading the original design effort for the Beam Control and Fire Control segment. Presently he serves as Lockheed Martin's ABL Chief Scientist.

Recently Dr. Billman was appointed as a Lockheed Martin Senior Fellow and as a Fellow of the Directed Energy Professional Society.



The **AIAA SAN FRANCISCO SECTION IN4M-LETTER** is a publication of the San Francisco Section of the American Institute of Aeronautics and Astronautics, a non-profit society whose primary purpose is to advance the arts, sciences, and technology of aeronautics and astronautics and to foster and promote the professionalism of those engaged in these pursuits.

Section Officers and Council: A complete directory of the section council can be found at <http://www.aiaa-sf.org>.

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Calendar

AIAA SF Section Events

- Thursday, January 22, 2004: Larry Rinek on *Boeing's Magnificent B-52 Stratofortress Bomber* – Ramada Inn Silicon Valley, 1217 Wildwood Ave, Sunnyvale, CA [Tel: 408-245-5330]
Cost: AIAA members and guests - \$20, students - \$15, non-members - \$25. Cash or check only. (Related article on page 1.)
- Thursday, February 26, 2004: Ken Billman on *A Status Report on the Airborne Laser Program* – Ramada Inn Silicon Valley, 1217 Wildwood Ave, Sunnyvale, CA [Tel: 408-245-5330]
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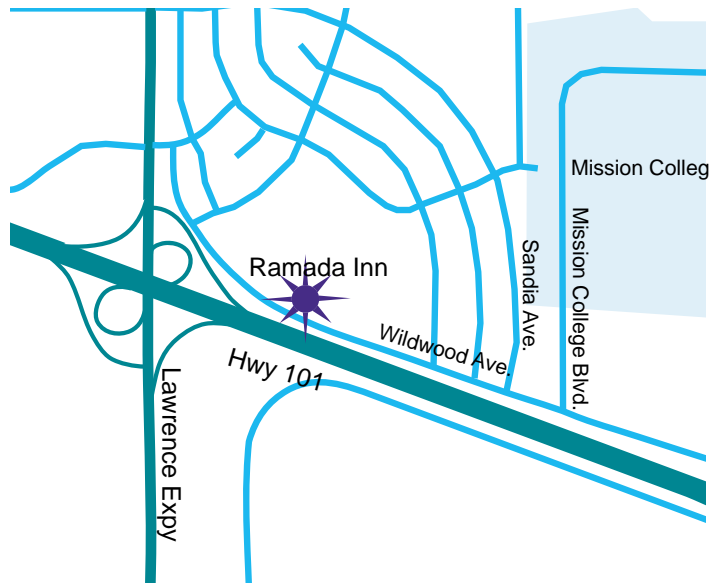
AIAA National Programs

Below are selected conferences, workshops, and other programs sponsored or organized by AIAA.

- *42nd AIAA Aerospace Sciences Meeting and Exhibit*, Reno, Nevada – Jan. 4-7, 2003. Includes: AIAA Awards Luncheon and AIAA Foundation Associate Fellows Dinner.
- *The Annual Reliability and Maintainability Symposium (RAMS)*, Los Angeles, CA - Jan. 26-29, 2004
- *Strategic and Technical Missile Systems Conference* (Secret/ U.S. Citizens Only), Monterey, CA - Feb. 3-5, 2004
- *Space Technology and Applications International Forum - 2004 (STAIF-2004)*, Albuquerque, New Mexico - Feb. 8-12, 2004

- *AAS Space Flight Mechanics Meeting*, Maui, Hawaii - Feb. 8-12, 2004
- *AIAA Defense 2004*, Washington, D.C. - Feb. 10-11, 2004
- *2004 Planetary Defense Conference: Protecting Earth from Asteroids*, Orange County, CA - Feb. 23

Additional details may be found on the national AIAA website at <http://www.aiaa.org/calendar>.



**American Institute of
Aeronautics & Astronautics
San Francisco Section**

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