VOLUME ONE
ISSUE TWO
FALL 2001

The Longhorn Liftoff

A NEWSLETTER FOR ALUMNI & FRIENDS OF AEROSPACE ENGINEERING & ENGINEERING MECHANICS AT UT AUSTIN

In This Issue...

High school students participate in a "treasure hunt" with the assistance of ASE graduate students using hand held GPS receivers.

ASE/EM Summer Tours Fun For All

Think the halls of Woolrich Laboratories were virtually empty this past summer except for those brave students who enrolled in grueling summer courses? Think again. Instead, the halls were filled (literally at times) with various groups of curious middle school and high school students on a mission to learn about the array of possibilities available in the field of aerospace engineering through hands-on demonstrations, games, and interactive activities.

MITE students participate in a hands-on Center for Space Research experiment led by Texas Space Grant Consortium.

Some of the groups that participated in these tours included the Women in Engineering Program (www.engr.utexas.edu), Minority Introduction to Engineering (www.engr.utexas.edu/eoe) and NexTech (a group of high school students from across the nation). ASE/EM graduate students, AIAA students, and Texas Space Grant Consortium staff all participated by presenting activities specific to their area of specialization. Alternating presentations and activities included a demonstration of the water and wind tunnel with Dr. David Goldstein and graduate student Roderick Austin, interactive flight simulation with graduate students Eduardo Gildin and Jens Ramrath, hand-held GPS demonstration with Greg Holt and Tifanie Smart (Indiana Jones was rumored to have appeared), a Center for Space Research lab experiment with Talia Jurgens and Margaret Baguio of Texas Space Grant Consortium, with rounds of Space Jingo and NASA videos in between.

All of the students who attended seemed very receptive and excited to be involved in these hands-on activities and demonstrations, and our graduate students enjoyed interacting with them as well. Greg Holt says, "The ASE Summer Tours were enjoyable for the guides as well as the students. It is encouraging to see high school students demonstrate an interest in your research area. I had several students comment that they wish more tours could be 'hands-on' likes the ones they experienced in this department. In addition, several of the students expressed interest in studying ASE in college."

Roderick Austin commented that the younger groups really seemed to benefit from the "hands-on approach." He says, "letting them touch the equipment . . . and handle the models provided more of an experience for them than simply having to sit and listen."

Overall, these organized tours were a true success (thanks to all of our wonderful tour guides), and now that the department is beginning to gain a reputation for its exciting, interactive tours, the requests have only continued to rise. And who knows – maybe we will see a few of these familiar faces roaming the halls as ASE/EM college students in the years to come.

Chairman's Column

Welcome to the second edition of The Longhorn Liftoff. Your reactions to the first edition were very complimentary and we promise to do our best to keep up your interest. We appreciate all of you who sent ideas for future editions and we will try to include as many as we can. In addition to our "Blast from the Past" column, we have now added "Where Are They Now?" which highlights the careers of a few alumni in greater detail. If you would like to be featured in future editions, we would love to hear from you and will do our best to include you.

I would now like to address some of the departmental questions and concerns that many of you have expressed an interest in. Several respondents have asked about enrollment. I am happy to report that enrollment is up again this Fall. We now have 433 undergraduates (up from 346 last Fall) and about 150 graduate students (about the same as last year). Current numbers are down from the record years of the mid to late 1980's and early 90's when Woolrich was bursting at the seams with almost 600-650 undergraduates and around 250 graduate students, but (we are very happy to say) numbers are up substantially over the lean years of the mid-1990's. Industry, graduate programs (our own and others across the country), and government are all actively recruiting our graduates, and entry level salaries for graduates are outpacing inflation substantially. It is not only the major aerospace corporations and contractors who seek out our graduates. This past year alone graduates took positions at General Motors, Intel, ExxonMobil and even in the financial industry. Over the past five years 23% of our B.S. candidates have gone directly to graduate school.

Several of you have also requested information about curriculum changes and development in the department. Opposite my column are brief descriptions of our new undergraduate laboratories in "controls" and "spacecraft design". Simulation is most definitely an ever growing and more powerful component of modern aerospace engineering, but engineering students, especially aerospace engineering students, still hanker after "hands-on" experiences. Designing, building and/or testing hardware and seeing if things really work as the analysis predicts can be both an enormous confidence builder as well as a real eye-opener! Both help produce the well-rounded engineer in whom we take pride.

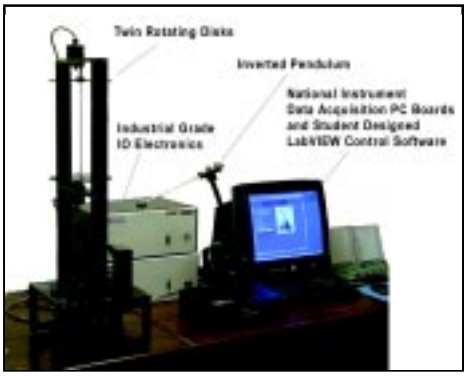
Thank you again for your support and feedback. We hope you enjoy the news and look forward to hearing from you soon.

D.S. Dolling, Chair, ASE/EM

New Controls Lab for UT Aerospace

Robert H. Bishop, Ph. D.

Discovery-based laboratory instruction helps teachers bring the theory presented in the classroom lecture to life. This is particularly true in control systems where students sometimes get lost in the labyrinth of mathematical system-theoretic concepts. The education literature provides many examples of high-quality controls laboratory programs and their success in connecting the classroom to the practical "hands-on" world. Generally speaking, ASE undergraduate students truly enjoy the experience of watching their control system design in operation on a physical system. Under the supervision of Dr. Robert H. Bishop, the UT Control Systems Laboratory is currently undergoing a significant upgrade in capability, usability, and accessibility.



ASE Controls Laboratory

The undergraduate ASE controls class currently has no formal laboratory component. However, for the past two years, the Educational Control Products (ECP) Model 505 Inverted Pendulum was a key element in one of two "take-home" design projects. For this project, students design their control system using analytical and computer-aided design techniques, and then each student controller design is implemented in the laboratory for testing. In one fun-filled session, all the controllers are tested with every student in attendance.

Central to the laboratory capability upgrade is a new Dell Dimension PC, a new high-performance National Instruments PCI-6703 data acquisition (DAQ) analog output board, and a new National Instruments PCI-6602 digital signal processing (DSP) board. A Controls Laboratory Manual was developed as a guide for students, and a two-hour lecture with twenty pages of notes is now ready. Accessibility of the experiments will be improved first by moving the facility into a better location, and second, through an on-going effort to make the laboratory remotely accessible via internet.

The laboratory needs more experimental hardware before considering the course as a formal offering. Our goal is to find resources for a classic mass-spring-damper experiment and a control moment gyroscope apparatus.

Orbital Mechanics Gets New Spacecraft Design Lab

Glenn Lightsey, Ph. D.

The ASE Department has created a new facility for designing, building, and testing satellites at the University of Texas. The finishing touches are being put on a facelift of room WRW 407 this fall. Formerly a student office area, the room will now be used to design and fabricate satellites that may actually be launched into space and operated by students. The suite contains two large slate tables upon which small satellites (< 30 pounds) can be integrated and functionally tested. The room will also house computers and electrical test equipment, such as oscilloscopes and signal generators, when completed.

The lab will be pressed into service as soon as this fall, with the planned design of small sounding rocket and satellite payloads that may be launched as early as next year. These small payloads will give both graduate and undergraduate students hands-on experience with building and operating satellites with a total project time span of a few years. Although the satellites are small, the projects being planned are expected to have a big impact on the orbital mechanics curriculum. Two projects that are currently being planned are a cluster of satellites to perform atmospheric research and a lunar flyby mission.

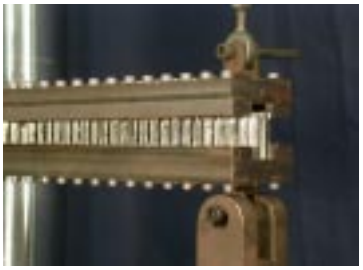
Delamination in High Temperature Sandwiches

Kenneth M. Liechti, Ph. D.

Work supported by NASA

Sandwich structures have long been used in aerospace structures due to their low weight, high stiffness and strength and durability. It has recently become possible to fabricate honeycomb cores from titanium, instead of the traditional nomex aluminum. The greatest advantage of introducing titanium core is that sandwich structures can be used at higher temperatures in vehicles such as the currently hibernating High Speed Civil Transport. One damage mode that can occur in sandwich panels is compressive delamination, where a delaminated portion of the faceplate buckles and causes further growth of the delamination.

In this study we have conducted experiments to determine the toughness of the faceplate/core bond over a range of temperatures to 180˚C. The faceplates were made from high temperature polymer (PETI-5) reinforced with carbon fiber (IM7). They were bonded to the titanium with FMx5 film adhesive. This data is being incorporated in models of delamination that account for core pullout on a cell-by-cell basis.



Titanium core sandwich structures

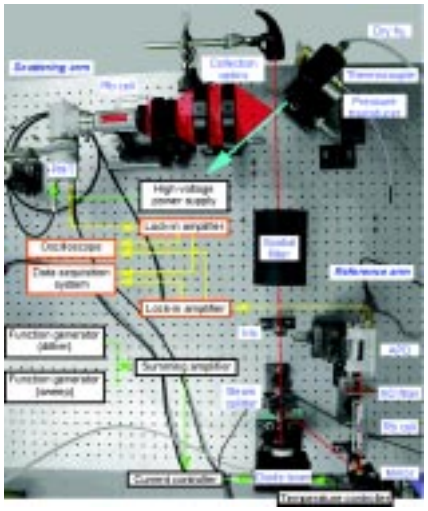
(a) adhesive fracture surface

(b) cohesive fracture surface

Velocity Measurements Using Filtered Laser Scattering

Philip Varghese, Ph. D.

Work supported by NASA and NSF



Rayleigh setup

When photons of light are scattered elastically by gas molecules they are Doppler shifted in frequency. Elastic scattering of light is called Rayleigh scattering. The Doppler shift of the light can be used to measure gas properties such as velocity and temperature. The gas velocity is determined from the mean frequency shift of all the scattered light, while the temperature is determined from the spread of the frequency shifts. In conventional laser velocimetry, one crosses two laser beams so that they interfere, and measures velocity at the crossing point. In this configuration small drifts in laser frequency cancel out, but one can only measure velocity at the crossing point, and one generally needs to add particles to the flow to provide a strong source of scattering. In high speed flows the particle motion may not be the same as the gas flow. In many other applications, such as flow past an airplane, it is impractical to add particles to the flow.

In our technique we use a single laser beam and measure the light scattered by the gas molecules themselves. This has the advantages that one can make measurements at several points along the beam, one does not need to “seed” the flow, and one can measure two components of velocity simultaneously by collecting light scattered in opposite directions. Because the frequency shifts are very small, the light source must have a very well-defined and stable output. The scattering signal is also quite weak. We have invented a technique that simultaneously enables us to frequency stabilize the laser very accurately, measure the small frequency shifts, and detect the weak scattered signal. We call the method Modulated Filtered Rayleigh Scattering (MFRS). We exploit the tuning capability of solid state diode lasers to set our laser near the D_2 line of rubidium (Rb) at 780 nm. The continuous tuning ability is also exploited to modulate the laser frequency rapidly. The scattered light is filtered through a small cell of Rb vapor. A small portion of the laser beam is also sent through a reference cell. Modulation of the laser frequency causes a rapid modulation in the intensity of the light transmitted through both cells. The modulation of the reference beam is used to frequency stabilize the laser by locking it to the Rb line. The modulation in the scattering signal is used to help detect the weak scattering by molecules. Velocity changes in the gas change the intensity of the scattered light transmitted by the filter cell, which is used to determine the gas velocity. We have successfully demonstrated velocity measurements in supersonic jets of gas, and simultaneous measurements of two velocity components with a single beam.

We hope to develop a system that can ultimately be used to measure gas velocity in microgravity combustion experiments on the International Space Station. We are also trying to develop a velocity sensor that can be used for real time measurements of all three components of an aircraft velocity relative to the air.

Blast from the Past

1940's

Harry W. Brown, M.S., A.S.E., 1944, is retired and living in Northridge, CA. **Don R. Patterson**, B.S., A.S.E., 1946, M.S., A.S.E., 1947, is a retired Senior Staff Project Engineer from Atlantic Richfield Company after 43 years of service. He resides in Jacksonville, TX.

1950's

Willard B. Bennet, B.S., A.S.E., 1950, retired in 1991 as a Senior Project Engineer for General Dynamics in Fort Worth, TX, where he currently resides. **William E. Brownrigg, Jr.**, B.S., A.S.E., 1953, is a retired Associate Planner after 27 years at LTV Aerospace Corporation, and now lives in Fort Worth, TX. **Robert J. Crawford**, B.S., A.S.E., 1959, is a retired Senior Manager from The Boeing Company. He is listed in "Who's Who" in California and is an elder in Mission Viejo Church of Christ. **Burlin M. Griffin**, B.S., A.S.E., 1955, is retired from the U.S. Government and resides in Tempe, AZ. He serves as financial secretary for First Baptist Church in Tempe. **James B. Griffin**, B.S., A.S.E., 1957, lives in Arlington, TX and is retired from Martin Marietta and LTV. His professional activities included development and flight testing of air and space based ballistic missile defense weapons/systems, including Homing Interceptor (HIT) and ASAT. He also participated in SDI with development of Air Force Based Interceptor systems. grief2@airmail.net **Maxie W. Jarrell**, B.S., A.S.E., 1958, currently lives in Williams, OR. mwjarrell@earthlink.net **Emmit A. Koelle**, B.S., A.S.E., 1957, is retired and resides in Bedford, TX. **Robert C. McWherter**, B.S., A.S.E., 1947, M.S., A.S.E., 1951, is a retired Engineering Lab Manager for Lockheed Martin and lives in El Paso, TX. He is an Associate Fellow of the Institute of Aerosciences and served as a Lt. Colonel for the U.S. Air Force in WWII and the Korean War. **John A. Russell**, B.S., A.S.E., 1957, is retired from the U.S. Department of Energy as Director of Alternative Fuels. He currently lives in San Antonio, TX. **John L. Sheport**, B.S., A.S.E., 1955, is a retired Manager of Mission Operations at Lockheed Missiles & Space Company. He is a Senior Member of AIAA. **Eugene A. Wadsworth**, B.S., A.S.E., 1956, is retired and living in Fort Worth, TX. e.a.wadsworth@worldnet.att.net **William R. Weideman**, B.S., A.S.E., 1958, is retired from Raytheon/E-Systems and living in Greenville, TX. His professional activities have included Consultant, FAA Designated Engineering Representative, Systems and Equipment, and Flight Analyst. cb11misty@aol.com

1960's

Robert N. Austin, B.S., A.S.E., 1958, M.S., E.M., 1960, Ph.D., E.M., 1963, is owner of A/M/G Company in Fort Worth, TX. **Raymond A. Boland**, B.S., A.S.E., 1963 is an Aerospace Engineer for the U.S. Army in Ft. Hood, TX. ray.boland@hood.army.mil **William C. Cobb**, B.S., A.S.E., 1966, is President of Cobb Consulting in Houston, TX. Some of his professional activities include Fellow, College of Law Practice Management, American Bar Association and Texas Bar Association speaker and consultant, and Chair of the Futurist Task Force in 1990. He has also served as a board member of the Downtown Houston Association. cobbwe@msn.com **Charles Cole**, B.S., A.S.E., 1960, M.S. A.S.E., 1962, lives in North Richland Hills, TX. He "retired from Vought Aircraft in 1994 after 30 years to join Global Helicopter Technology in Arlington, Texas as Director of Programs and Business Development." He is currently upgrading Vietnam-era Huey helicopters with new advanced technology engines and high performance devices. He says he is "still enjoying the '8 am to 5 pm' schedule!" ghti@airmail.net **William C. Farish, IV**, B.S., A.S.E., 1968, is Director of Product Engineering at Fleetwood Homes in Riverside, CA. He is currently serving as Chairman of Manufactured Housing Institute Technical Activities Committee. **Lazarus Gonzales, Jr.**, B.S., A.S.E., 1965, is a Computer Facilities Administrator for NASA JSC. He has been the recipient of the JSC Certificate of Commendation and holds certified minister credentials with the Assemblies of God. lazarus@ghg.net **Stephen H. Holliday**, B.S., A.S.E., 1969, is a Project Manager for Jacobs Engineering Group, Inc. in Greenville, SC. He is also a retired Lt. Colonel of the U.S. Air Force. steve.holliday@jacobs.com **John W. Johnson**, B.S., A.S.E., 1967, is President of JWJ Enterprises in Denton, TX. **James C. Murphy**, B.S., A.S.E., 1958, M.S., E.M., 1961, is retired and living in Houston, TX. **Ray P. Reed**, M.S., E.M., 1958, Ph.D., E.M., 1966, is owner of Proteon Services in Albuquerque, NM. rpreed@dsme.org **Kenneth C. Spinks**, B.S., A.S.E., 1969, is an Engineer for Lockheed Martin in Grand Prarie, TX. ken.spinks@lmco.com **Robert D. Wakefield**, B.S., A.S.E., 1967, is a Senior Engineer for Jaycor in Albuquerque, NM. rwakefield@jaycor.com **Richard D. Whitlock**, B.S., A.S.E., 1967 writes, "I work for NASA and am currently Manager of the Engineering Cost & Resources Analysis Office at the Johnson Space Center." whitlock@alumni.utexas.net **Kenneth A. Young**, B.S., A.S.E., 1962, retired from Lockheed Martin in 2001. He has also worked at NASA JSC and Northrup Grumman and is currently consulting in Space Operations and Integration while living in Seabrook, TX. kenyoung@ pdq. net

1970's

Michael A. Baker, B.S., A.S.E., 1975, is an Astronaut at NASA JSC. **Chul Y. Choe**, Ph.D., E.M., 1972, works for Averstar in Houston, TX. cychoe@Averstar.com **Stanley R. Galanski, Jr.**, B.S., A.S.E., 1978, is Director of Central U.S. Channel Sales for Oracle Corporation in Houston, TX. He has served as a past member of the Practitioners Advisory Board for the Department of Computing Sciences at Villanova University, the Aerospace Engineering Advisory Committee for UT Austin, and the Space and Defense Advisory Council. He has also authored a software program (using Artificial Intelligence) which identified the viable wine growing regions in the U.S. and throughout the world. galankski@swbell.net **Kenneth E. Griffin**, B.S., A.S.E., 1970, M.S., A.S.E., 1972, is Manager of the Aerospace Structural Section at Southwest Research Institute in San Antonio, TX. Some of his professional activities have included developing a Patent for Variable Stiffness Spar and teaching at the Air Force Academy and Test Pilot School. He has also received two Air Force Scientific Achievement awards, and is an Associate Fellow of AIAA. skgrif@gvtc.com **Bill Hendricks**, Ph.D., A.S.E., 1970 writes, "I am currently the Chief Engineer and Director for the Theater High Altitude Area Defense (THAAD) Weapon System at Lockheed Martin Space Systems Company in the Missiles and Space Organization in Sunnyvale, CA." bill.hendricks@lmco.com **Bruce Loftis**, B.S., A.S.E., 1971, M.S., A.S.E., 1972, lives in Champaign, IL. **Glyn D. Martin**, B.S., A.S.E., 1971, M.S., A.S.E., 1973, writes that he "retired from the U.S. Air Force in 1999 as a Colonel and Commander of the 412th Operations Group at the Air Force Flight Test Center, Edwards AFB, CA. He is an Associate Fellow of the Society of Experimental Test Pilots and now flies for Southwest Airlines." martinize3@aol.com **Milton B. Porter**, B.S., A.S.E., 1975, is a Scientist for Boeing Satellite Systems in CA. He is a member of Tau Beta Pi, Sigma Xi and Sigma Gamma Tau. miltporter @aol.com **Warren P. Schneider**, B.S., A.S.E., 1971, works for Trade-Ranger in Texas. warren.schneider@trade-ranger.com **Curtis C. Thompson**, B.S., A.S.E., 1979, is Vice President for CACI, Inc. in Oklahoma City, OK. cuthompson@caci.com **Richard T. Weiss**, Ph.D., E.M., 1972, works as a Senior Technical Advisor for Kellogg Brown & Root in Houston, TX. He also serves as Treasurer of Offshore Mechanics & Arctic Engineering.

rick.weiss@halliburton.com

1980's

Paul A. Allen, B.S., A.S.E., 1987, is Manager of Product Safety & Compliance at Peterbilt Motors Company in Denton, TX. He writes, "In my current position I act as an expert witness for Peterbilt in litigation. I evaluate product changes for compliance to federal regulations. I assess safety related vehicle componentry, and direct changes, guidelines or warnings as necessary." pallen@paccar.com **Patrick J. Alsup**, B.S., A.S.E., 1983, is a Project Engineer in the area of Solar Arrays at Boeing Satellite Systems in El Segundo, CA. patrick.alsup@hsc.com **Timothy L. Brown**, B.S., A.S.E., 1985, is a Captain for United Airlines and resides in Spokane, WA. He also serves as Chairman of the Board for the local area Habitat for Humanity. flyingdoginn@earthlink.net **James N. Cooper**, B.S., A.S.E., 1985, is a Senior Structures Engineer for Raytheon in Greenville, TX. cooperjn@raytheon.com **Colette de la Barre**, B.S., A.S.E., 1983, M.S., A.S.E., 1985, is a Manager for The Boeing Company in VA. **Paul Dizon**, B.S., A.S.E., 1989, is a Spacecraft Mechanisms Engineer for Swales Aerospace. He writes that his position is "detailed to the Naval Research Laboratory in Washington, D.C., as the lead engineer for all mechanisms onboard the NEMO spacecraft." He is also a Senior Member of AIAA. dizon@ssdd.nrl.navy.mil **Suzanne Arnold Gertz**, B.S., A.S.E., 1985, is an Aerospace Structural Engineer for the U.S. Government Air Force Civil Service at Eglin AFB in FL. arnolds@eglin.af.mil **Jeffrey G. Glosup**, B.S., A.S.E., 1983, M.S., A.S.E., 1986, is a Senior Staff Engineer for Computer Systems Group at Sun Microsystems, Inc. in Palo Alto, CA. jeff.glosup@sun.com **Dana L. Gunter**, B.S., A.S.E., 1983, writes that he is currently serving as the U.S. Air Force Squadron Commander at Randolph AFB, TX and is responsible for the beddown of the Air Force's newest trainer aircraft, T-6A Texan II, and the instructor pilot training for both the T-6 and T-37 aircraft. airdmoney@aol.com. **Bryan L. Hart**, M.S., E.M. 1981, is Principal Vessel Engineer for Stone & Webster in Houston, TX. He is a member of ASME. Bryan.Hart@stoneweb.com **Paul Hartman**, M.S., A.S.E., 1987, is Commander of the Space Operations Squadron for the U.S. Air Force in Sunnyvale, CA. He is a member of AIAA and the AF Association. pghartman@aol.com **Robert L. Hazzard, Jr.**, B.S., A.S.E., 1989, is a Design Engineer for the Turbine Module Center at Pratt & Whitney in CT. hazzarr1@pweh.com **James K. Holliday**, B.S., A.S.E., 1981, is Manager of Engineering at Boeing in Huntington Beach, CA. kevin.holliday@boeing.com **Ronald G. Hopkins**, B.S., A.S.E., 1980, Ph.D., A.S.E., 1985, is a Senior Engineer Specialist for The Aerospace Corporation in Los Angeles, CA. ronald.g.hopkins@aero.org **Jospeh S. Karro**, B.S., A.S.E., 1989, is Vice President for Credit Suisse First Boston in New York City, NY. scott.karro@csfb.com **Russell Kuitems**, B.S., A.S.E., 1982, is a Project Manager for IBM in Essex Junction, VT. He is also a member of the Knights of Columbus. rkuitems@us.ibm.com **Kevin Locke**, B.S., A.S.E., 1982, is a Senior Software Engineer for IBM in Austin, TX. kevin@thesupper.net **David M. Luschen**, B.S., A.S.E., 1983, works for Pfizer, Inc. in Ponte Vedra Beach, FL. david.m.luschen@pfizer.com **Masaaki Murata**, Ph.D., A.S.E., 1982, is Director of Space Technology Research Center for National Aerospace Laboratory of Japan. murata@nal.go.jp **Steven W. Millard**, B.S., A.S.E., 1981, is an Aerospace Engineer working in Ascent Aborts at United Space Alliance. He is also a member of the U.S.A. Golf League. Steven.W.Millard@USAHQ.Unitedspace alliance.com **Steve Nerem**, M.S., A.S.E., 1985, Ph.D., A.S.E., 1989, writes, "Since September 2000 I have been an Associate Professor in the Department of Aerospace Engineering Sciences, University of Colorado at Boulder." nerem@colorado.edu **Michael A. Regester**, B.S., A.S.E., 1988, is Vice President of Signature Science, LLC., in Austin, TX. mregester@austin.rr.com **Robert T. Richards**, M.S., A.S.E., 1983, is Vice President of Orbital Launch Systems for Orbital Sciences Corporation in Dulles, VA. He has been the recipient of the Presidential Medal of Technology, the Smithsonian Air and Space Museum Award, and is an AIAA Associate Fellow. richards.bob@orbital.com **Stephanie V. Walker**, B.S., A.S.E., 1989, is a Subsystem Manager of flight crew equipment for NASA. swalker1@ems.jsc.nasa.gov

1990's

Jeffrey W. Amos, M.S., A.S.E., 1991, Ph.D., A.S.E., 1996, is a Program Manager for Trilogy Software, Inc. in Austin, TX. jeff.amos@trilogy.com **Cyril Annarella**, M.S., A.S.E., 1995, is Head of Marketing of North Europe for Gemplus in France. cyril.annarella@gemplus.com **Bryan D. Bogle**, B.S., A.S.E., 1996, is a Project Manager for Applied Materials in Austin, TX. He is currently serving in the Texas Army National Guard at the rank of Captain. bryan_bogle@amat.com **Tifenn Boisard**, M.S., A.S.E., 1998, is a Shock & Vibration Engineer at Dell Computer Corporation in Austin, TX. tifenn@alumni.utexas.net **Cathy M. Cantu**, B.S., A.S.E., 1997, is a Corporate Recruiter for Tactica in Dallas, TX. cathy.cantu@tactica.com **Lance H. Carter**, Ph.D., A.S.E., 1998, is a Principal Engineer for Orbital Sciences Corporation in Germantown, MD. He is a member of AIAA. carter.lance@orbital.com **Michael L. Clavenna**, B.S., A.S.E., 1994, is a Captain and Pilot. He graduated from U.S. Air Force pilot training in 1996 and has been stationed in Okinawa, Japan and North Dakota flying KC-135 Stratotankers. He is soon to fly U2s. clavenna@earthlink.net **Will Collier**, M.S., A.S.E., 1993, writes that he "recently relocated to Marietta, GA, to accept a position with Lockheed Martin Aeronautics Company as a Senior Embedded Software Engineer for the F-22 Raptor stealth fighter." willcollier@mac.com **John H. Cooper**, M.S., A.S.E., 1998, works as an Engineer in Attitude Control for Space Systems. cooper.john @ssd.lorol.com **George W. Davis**, B.S., A.S.E., 1987, M.S., A.S.E., 1990, Ph.D., A.S.E., 1996, is a Senior Systems Architect for Commerce One E-Government Solutions in Laurel, MD. getgo@smart.net **Myron B. Davis**, Ph.D., A.S.E., 1996, is a Software Engineer for Xeno Development in Grapevine, TX. bdavis@xeno.com **Neil F. Erian**, B.S., A.S.E., 1991, began his Ph.D. studies in Philosophy at Fordham University, New York City in the fall of 2001. ursus-philosopher@nyc.rr.com **Edward Eskola**, B.S., A.S.E., 1999, is an Engineer for United Space Alliance in Houston, TX. eskola@mail.ev1.net **Rick Garcia**, B.S., A.S.E., 1997, writes that he graduated from Texas A&M with a M.S. degree in Nuclear Engineering on August 11, 2001. He began work as an Associate Nuclear Engineer with Foster Wheeler Environmental Corporation in July, 2001. txrocketman@yahoo.com **Brian C. Gildon**, B.S., A.S.E., 1995, is a Director at Motorola in Austin, TX. gildon@alumni.utexas.net **Carla S. Haroz**, B.S., A.S.E., 1996, is a Space Station Flight Controller for NASA. charoz@earthlink.net **David R. Heim**, M.S., E.M., 1994, is a Senior Finite Element Analyst for Freudenberg-NOK in Manchester, NH. doh@fngp.com **Michael Heiser**, B.S., A.S.E., 1995 writes that, as an Engineer for NASA, he is "currently working at JSC on the MAGIK Team assessing kinematic robotic tasks involving the International Space Station." utkid69@aol.com **Kristi Crutchfield Horst**, B.S., 1999, is a Thermal Engineer for Ball Aerospace & Technologies Corp. in Boulder, CO. She also volunteers at her church on Sundays. khorst@ball.com **Kevin J. Kane**, B.S., A.S.E., 1995, is a Senior Developer for BMC Software in Austin, TX. In his local community he serves as Commissioner for the City of Austin Telecommunications Commission and as a Mentor for Austin I.S.D. Partners in Education Program. wolfman@io.com **Yuh-Long Leu**, Ph.D., A.S.E., 1997, works in Software Design at Nortel Networks in TX. albertleu@ hotmail.com **Ilyas Mohammed**, Ph.D., A.S.E., 1998, is Manager of the Simulation Group for Tessera

Technologies in CA. imohammed@ tessera.com **Richard B. Mrozinski**, M.S., A.S.E., 1998, is an Engineer for NASA JSC in Houston, TX. He is a member of AIAA. richard.b.mrozinski1@jsc.nasa.gov **Anastasios Nenes**, B.S., A.S.E., 1991, writes that he has "accepted an offer of employment with Piaggio Aero Industries, manufacturer of small business jets. The position is a permanent offer of employment and is located near Genova, Italy." anastasiosnenes@hotmail.com **Jimmy Ogden**, B.S., A.S.E., 1997, is a Project Manager at Trilogy, Inc. in Austin, TX. jimmy_ogden@trilogy.com **Leslie M. Phinney**, B.S., A.S.E., 1990, is an Assistant Professor at the University of Illinois, Urbana-Champaign. She is a member of AME, ASEE, OSA, SWE and the recent recipient of the NSF Career Award, 2000. phinney@uiuc.edu **David W. Reed**, B.S., A.S.E., 1993, works in Strategic Supplier Management at Applied Materials in Austin, TX. He is a company member of the Rude Mechanicals (a theatre collective) and is involved in stage management, production management, light/sound operations and backstage crew. David_W_Reed@amat.com **Walter H. Rutledge**, Ph.D., A.S.E., 1990, is a Manager at Sandia National Laboratories in Albuquerque, NM. His professional activities include Manager of Engineering and Sciences Research Foundation Aerosciences Discipline, Sandia Representative to DOD RCC/Range Safety Group, and Sandia Representative to STAI and SATA organizations. He also currently serves on the Departmental Visiting Committee for the ASE/EM Department at UT Austin. In his local community, Walter is an Assistant Scoutmaster for Boy Scouts of America and a soccer referee. whrutle@sandia.gov **Christopher Stambaugh**, B.S., A.S.E., 1999, works in Guidance, Navigation and Control as a Shuttle Flight Controller for United Space Alliance. cstambau@ems.jsc.nasa.gov **Matthew T. Verona**, B.S., A.S.E., 1991, is CEO of Sugarland Software, Inc. in Sugarland, TX where he specializes in software consulting for NASA JSC and various other aerospace and telecommunication companies. www.sugarlandsoftware.com. mattverona@ev1.net **Michael E. Webber**, B.S., A.S.E., 1995, is a Senior Scientist for Pranalytica, Inc. in Santa Monica, CA. He is a member of OSA, AIAA, and ASME. michael@rarejules.com **Mark L. Whittum**, B.S., A.S.E., 1992, is a Senior Mechanical Engineer of Avionics at Kollsman, Inc. in Merrimack, NH. He became a Registered Professional Engineer in 2001. In his local community he is a board member at Temple Beth Shalom of Cambridge, MA and a math tutor at the local high school. mwhittum@kollsman.com

2000's

Bob Bocchieri, M.S., A.S.E., 1996, Ph.D., A.S.E., 2001, is a Senior Engineer for Applied Research Associates, Inc. in Sunnyvale, CA. He is also a contributing editor to the AIAA Student Journal. allynbob@home.com **William R. Frank**, M.S., A.S.E., 2001, is an Engineer for Exxon Mobil Upstream Research in Houston, TX. b.frank@alumni.utexas.net **Marco T. Longoria**, B.S., A.S.E., 2001, is a Stress Engineer for Raytheon Aircraft Integration Systems in TX. He is a member of Sigma Gamma Tau. LongoriaMT@Raytheon.com **Jeong Beom Ma**, M.S., A.S.E., 2000, currently lives in Raleigh, NC. jbma218@yahoo.com **Alexandre A. Motta**, M.S., E.M., 2000, is a Lt. Commander in the Brazilian Navy and resides in Rio de Janeiro. alexmotta@usa.net **Bruce Rabalais**, M.S., A.S.E., 2001, is a Senior Engineer for Titan Systems, Inc. in Houston, TX. He is a member of AIAA.

Where Are They Now?

The Longhorn Liftoff introduces its newest column, "Where Are They Now?" which highlights the career paths of individual alumni. If you are interested in submitting a brief article (150 - 200 words) for upcoming issues, please contact Kendra Cox via e-mail at kendra.cox@mail.utexas.edu or by phone at (512) 471- 4234. We look forward to hearing from you soon.

Aubrey Stratton, B.S., A.S.E., 1966

Aubrey Stratton is Director of the Airframe and Installation Core Competency Center at Lockheed Martin Aeronautics Company (LM Aero). LM Aero headquarters are located in Fort Worth, Texas with operating sites in Palmdale, California and Marietta, Georgia. Aubrey is responsible for developing and deploying the people, processes, tools, and technology for structural design and analysis, materials and processes, manufacturing engineering, manufacturing planning and tool design, CAD/CAM engineering, and Build-to-Package release systems to support the execution of LM Aero programs.

He graduated with a B.S. degree in Aerospace Engineering from The University of Texas at Austin in 1966 and went to work in the area of structural flight loads development for General Dynamics Fort Worth Division (currently LM Aero). He received his M.S. degree in Engineering Mechanics from Southern Methodist University in 1971. He is a member of AIAA and SAE. He serves on the Program Committee for the International Council of Aeronautical Sciences and on the AIAA International Aircraft Committee. He also serves as the Lockheed Martin Corporate University Executive Liaison for UT Austin.

Aubrey has 35 years experience in military aircraft development at LM Aero. Prior to his current position, he held positions of Engineering Chief of the F-16 Loads and Criteria Group, Engineering Manager of Structures Technology, Analysis Branch Manager of the Weapons System Design Core Competency Center, and then Director of the Weapons System Design Core Competency Center.

John Hicks, B.S., A.S.E., 1969

I graduated from UT Austin with a Bachelor of Science in Aerospace Engineering in June 1969 and came straight out to Edwards Air Force Base to work in the world of aircraft development and flight test. I have spent the last 32 years there with the Air Force Flight Test Center followed by the NASA Dryden Flight Research Center. During that period I also graduated from the Air Force Test Pilot School, received my M.S. in Aeronautics from CalTech, and graduated from the Defense Language Institute in both the German and Russian languages.

Professionally I have been fortunate to have developed and flight tested some of the most interesting aircraft, missiles and related aeronautics technologies around. My engineering education has been put to the test from low subsonics to high hypersonic speeds, and from sea level to over 100,000 feet. This has included such military craft as the C-5A, F-16, FB-111 and the Air-Launched Cruise Missile (ALCM). It has also included aeronautics research with Germany's DLR on the Tornado and Alpha Jet, the forward-swept wing X-29 at Dryden, the National Aerospace Plane known as the X-30, and the joint U.S. – Russia flight test of the world's first hypersonic scramjet at Mach 6.5.

In a project known as PHYSX, I conducted hypersonic boundary layer transition experiments at Mach 8 on a specially designed wing glove on the first-stage wing of the Pegasus rocket. Following this I was the creator/initiator and first project manager of the X-43 Hyper-X vehicle and launch configuration concept, designed to flight test an integrated scramjet and airframe up to Mach 10 at 10,000 feet. In closing out my career, I recently completed developing and testing the General Atomics-ASI Predator B and AeroVironment Helios solar-electric aircraft. I was privileged to be a part of the Helios flight team that just set a new world altitude record for sustained flight of 96, 863 feet, surpassing a 25-year old SR-71 record of 85, 068 feet.

Walter Hammond, M.S., A.S.E., 1973

Walter E. Hammond, P.E., M.S. A.S.E., May 1973, joined the Air Force for a four year stint during his last year at U.T., while completing his M.S. Thesis entitled "Laser Anemometer Design Study." Walter conveys a sincere thanks to his thesis supervisor, Dr. Charles E. Hickox, and to Drs. John J. Bertin and Frank G. Collins who ably served on his Master of Science committee back then and got him through. He served a four year stint in the Air Force as Electronic Warfare Officer aboard B-52Gs at Barksdale AFB, LA. He then joined the California Air National Guard as C-130B and C-130E navigator for three years. He worked at Rocketdyne Division of Rockwell International in Canoga Park, CA at the same time. In 1979 Walter embarked upon a Doctor of Engineering program, offered at the time by Texas A&M (sssss !!!!!!). While at A&M he served double duty in the Air Force Reserve, counseling ROTC cadets and filling a slot as USAF Academy Liaison Officer by recruiting cadets from the local high schools.

Finally, in 1983 after four years in residence, Walter finished the coursework requirements for various degrees (Master's and Doctorate-level degrees in Industrial Engineering, and Master of Business Administration) and moved his family to Huntsville, AL to finish the Doctor of Engineering Internship Report and work for Teledyne Brown Engineering. In 1986 he moved to Sacramento, CA for a stint with Aerojet Propulsion Company, then returned to Huntsville in mid-1987. In 1996 he worked another stint with NASA's National Technology Transfer Center in Wheeling, WV. In between, and to date, he has worked a succession of engineering consulting assignments for various companies and clients in Huntsville, ending with his present assignment as Senior Engineer at Pace and Waite, Inc. For a while (1994 - 1996), Walter ran his own engineering consulting services company, Creative Engineering Corporation, based out of Huntsville. His Air Force Reserve career has been varied, with assignments to the National Air Intelligence Center (Wright-Patterson AFB, Dayton, OH); the Air Force Research Lab in Dayton, OH; the Assistant Secretary of the Air Force for Acquisition (SAF/AQX); and the Center for Aerospace Doctrine, Research, and Education (CADRE) at Maxwell AFB, AL. He presently serves as Executive Officer at the Air Force Scientific Advisory Board, Pentagon. He is glad to report that his coworkers at the Pentagon were all unharmed in the September 11 terrorist attack.

1991 Reunion a Success

On the weekend of June 23, 2001, 28 graduates from the Aerospace Engineering class of 1991 gathered in Houston for their 10-year class reunion. Alumni came from as far away as San Francisco and New York City to attend. Alumni reminisced over drinks at the warm up party on Friday night. At the Saturday picnic, alumni and their families enjoyed a fajita dinner at a neighborhood park. A basketball game even broke out, reminiscent of the Friday games after class. The reunion concluded with a Sunday brunch that lasted until Sunday evening. The closeness and camaraderie of our class was apparent as every event lasted much longer than planned. In the end, no one wanted to say good-bye.

If you are interested in planning your own alumni reunion, Jonathan Graf, B.S., A.S.E., 1991, is willing to give advice. He can be reached via e-mail at jpeag@ev1.net.

The Longhorn Liftoff
The University of Texas at Austin
Aerospace Engineering & Engineering Mechanics
W. R. Woolrich Laboratories, 215 C
Austin, Texas 78712-1085

ADDRESS CORRECTION REQUESTED

Non-Profit Organization
U.S. Postage PAID
PERMIT NO. 391
AUSTIN, TEXAS

D. S. Dolling, Ph.D.
Chair

The Longhorn Liftoff is published by the Department of Aerospace Engineering & Engineering Mechanics, The University of Texas at Austin

Phone: (512) 471-7593 Fax: (512) 471-3788
E-mail: kendra.cox@mail.utexas.edu URL: http//www.ae.utexas.edu

Editorial, Design & Photography: Kendra Cox Editing & Proofreading: Michael Waddell

ASE Student Wins Prize in AIAA Student Paper Competition

ASE graduate student Meredith Fitzpatrick

Kudos to graduate student Meredith Fitzpatrick, who recently participated in the 9th Annual International Student paper competition at the 15th Annual AIAA/USU Conference on Small Satellites. She received fourth place (a $2,000 prize) out of a very competitive field of twelve entrants. Her paper was entitled APTUS: Applications for Tether United Satellites, a project that she worked on as an undergraduate student in Dr. Wallace Fowler's Space Mission Design course here at UT. The program is in cooperation with Stanford University, called CubeSat, which provides low cost launches to student-built satellites. Each satellite must weigh one kilogram or less (pico-satellite) and be exactly ten centimeters in length on each side.

Meredith's paper specifically involves tethering two of these CubeSats together. The mission will test the electro-dynamic properties of the space tether, and its ability to change the orbital altitude of CubeSat. People across the world will be able to take pictures of the tether as it passes over their locations. These pictures will be used to increase the accuracy of atmospheric density models. She also has plans for future CubeSat missions, one which involves sending a "fleet" of CubeSats to the moon on a free return trajectory, possibly taking pictures of the dark side of the moon.

Meredith says the trip to Utah was very productive and a lot of fun. She met people there who had solutions to problems she thought she might never solve, and even received five job offers within a matter of hours! She feels the presentation opportunity was excellent training for her future career, and even though the competition was fierce, she plans on entering again. She says, "Overall, the conference was a wonderful and eye-opening experience. Next year I plan to use this 'leg up' and hopefully I'll come back with first place."

UT ASE/EM is proud to announce that it will be hosting the

50th Annual Region IV
AIAA Student Paper Conference
April 12th & 13th, 2002

Please contact Kendra Cox at 512-471-4234 or kendra.cox@mail.utexas.edu for more information.