



-----Original Message-----

From: DUNBAR, BONNIE J. (JSC-AC8) (NASA)

Sent: Thursday, September 11, 2003 10:29 AM

To: STONE, BROCK R. (RANDY) (JSC-AB) (NASA); HOWELL, JEFFERSON D., JR

(JEFF) (JSC-AA) (NASA)

Cc: GARMAN, SUSAN H. (SUE) (JSC-AC) (NASA); CRAIG, MARK K. (JSC-AC) (NASA); CARPENTER, DANIEL K. (JSC-AP111) (NASA); HAYES, GREG W. (JSC-AH)

(NASA); POTTER, JULIANNA (JSC-AP) (NASA); BLANCHARD, DOUGLAS P. (DOUG)

(JSC-SA111) (NASA); LANE, DONNA J. (JSC-OD3) (MEI); KINCAID, MICHAEL A.

(MIKE) (JSC-AH2) (NASA); CABANA, ROBERT D. (JSC-CB) (NASA); OCHOA, ELLEN

(JSC-CA) (NASA); NAUGHTON, ROBERT J. (BOB) (JSC-CC) (NASA)

Subject: From Portland State University: A Thank you for KC135

Experience

Importance: High

Beak and Randy,

This letter from Dr. Mark Weislogel (Portland State University) is a great example of why we do what we do for University Students and Faculty with the KC-135 parabolic aircraft. If we are truly committed to developing the next generation of engineers who will carry the legacy of maintaining our presence in LEO and exploring beyond it, then we need to continue supporting programs that work. This one does.

As Dr. Weislogel also pointed out, it reaches beyond the University into the community, helping to educate a populace about the value of research, engineering, and space exploration.

It also works because of the dedication of people in the trenches such as Dr. Donn Sickorez (AH) and John Yaniec (Ellington/CA).

Thank you all for your support.

Bonnie

-----Original Message-----

From: Mark Weislogel [mailto:mmw@cecs.pdx.edu]

Sent: Wednesday, September 10, 2003 5:53 PM

To: YANIEC, JOHN S. (JSC-CC4) (NASA); don.g.sickorez@nasa.gov; DUNBAR, BONNIE J. (JSC-AC8) (NASA)

Subject: Thank you for KC135 Experience (PSU)

John, Don, Bonnie;

Ok. I have a minute now just to finally say what an excellent opportunity 'we' had in the microgravity NASA KC135 undergraduate student project last year culminating in our university's first low-g flight in March 2003...And by 'we' I mean myself, my students, my department and the college at Portland State University...

I can not think of a more serious, more relevant, more exciting way to teach what engineering is all about. The program's emphasis on real deadlines, real reporting, real safety, real design, real NASA is simply beyond what our institution can deliver and we are deeply grateful to NASA to have been able to participate. The reaction from the students, their peers, their parents, the alumni and local community were too good to be believable. This must be just what you envisioned the program to be. I hate to sound so trite, but the program exceeds expectations--from the organization, to the support, to even the personalities (even you pass John). You get an A+ for your part as do most of the students who return from the flights.

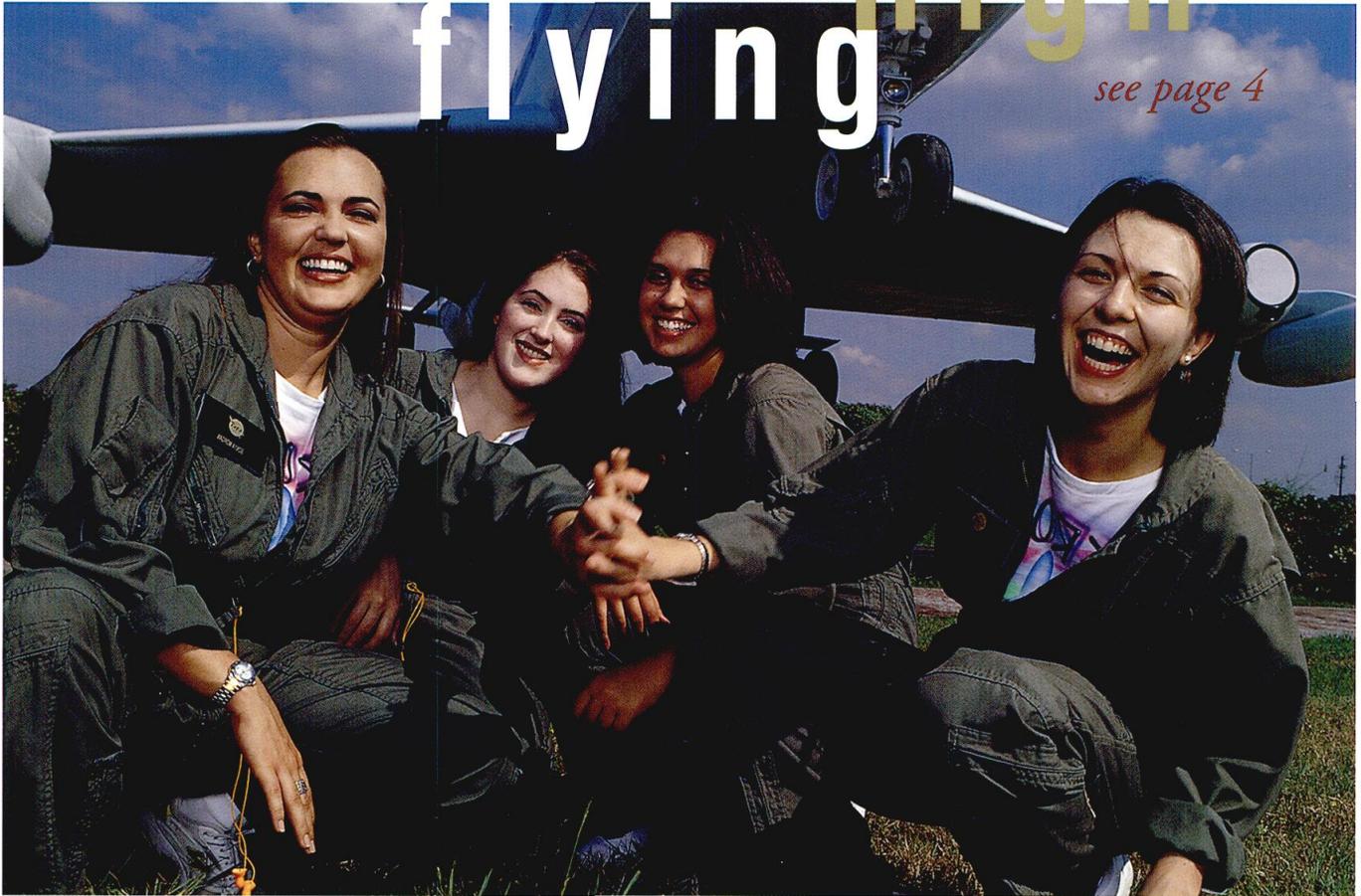
The NASA Undergraduate KC-135 program delivers an unmatched opportunity to experience engineering. It has all the elements, plus the thrill. Great program. Great work. Hats off to you all.

Sincerely,

Mark W. Dept. Mech. Engineering
P.O. Box 751-ME
Portland State University
Portland, OR 97207-0751
ph 503-725-4292/fx 503-725-8255

flying high

see page 4



Beryl Striewski

WEIGHTLESS WONDER: Sonya Morgan, Carolyn Jessop and Megan and Aileen Ebadat conducted experiments in a zero gravity environment aboard the KC-135.

Building on Experience

Become a part of the changing face of UHCL by taking advantage of the many naming opportunities available in the new student services and classroom building, which will open during the university's 30th year.

The three-story, 160,000-square-foot structure opens the door for students to experience the best UHCL has to offer by streamlining enrollment, registration, financial aid and scholarship services as well as student support services in addition to expanding available classroom space. Named classrooms, laboratories, office space, common areas, study carrels and exterior landmarks will become part of the memories forged by students, friends and alumni for years to come.

To learn more about naming opportunities, call the Office of University Advancement, 281-283-2021.

To get a bird's eye view of the new building from our construction Web cam, visit www.uhcl.edu/webcam.html.



cover story 8 ▶
**Through the
looking glass**

Research takes a closer look at body size and self-esteem in African-American, European-American and Mexican-American women.

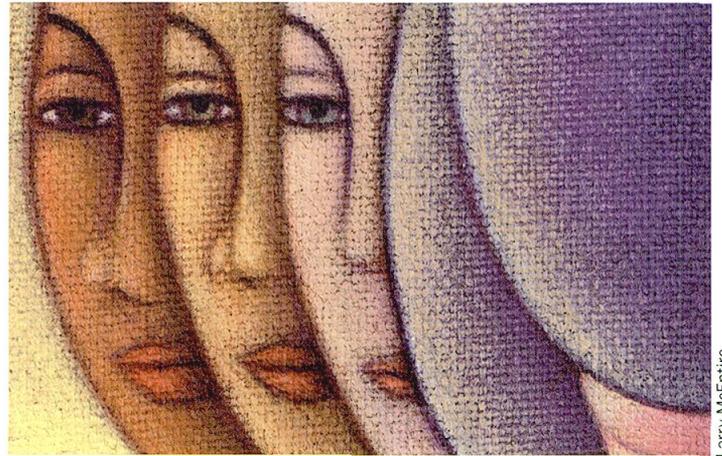
feature

Flying high 4 ▶

Students conduct experiments on spinal cord excitability on NASA's KC-135 "vomit comet."

What do
you think?

Please take a few moments to complete our Egret survey at www.uhcl.edu/egret



Larry McEntire



Beryl Strewski

environs

- Signature 2**
- Terra Firma 3**
- High Tide 7**
- Splash 11**
- Wavelengths 12**
- Soarings 13**
- Silver Linings 14**
- Sundial 16**



Key to a great university

When you are the new person in the office, everyone wants to meet you and hear what you have to say about the job. At the same time, you try to learn more about your new colleagues. I have spent the past few weeks visiting with students, administrators, faculty and staff, alumni and community partners. Mostly, though, I have been listening. I am impressed with what I have heard, and I am looking forward to learning more about all of our universities.

I want to take this opportunity to share with you some of my beliefs about higher education, beginning with effective leadership. One of the most important characteristics of effective leadership is the way it helps individuals achieve their hopes and dreams. In my mind, we measure the success of our universities on the successes of others.

Leadership is also about results, rather than methods or processes. This is not to say that results and methods are always mutually exclusive; many times, they complement each other. Too often, though, the concentration is on form at the expense of function. A curriculum vita, for example, can reflect years of research, but the measure of research leadership is its impact on a field of study or on society.

One of our administrators at the University of Houston recently asked around for opinions on how a good university becomes a great university.

One of the answers was simply to act like a great university. How do great universities act? One way is by being who they are, not trying to “copy” another institution. Each of our universities must determine its unique strength, and then apply resources to become a leader in that field. In doing so, we look at where we are today in relation to where we want to be tomorrow, which is a more important measure than comparing ourselves with universities we think are our peers.

Another way to act like a great university is to be flexible. Just because we have always done something that way should never be the reason to continue doing it that way. Flexibility is more than think-

One of the most important characteristics of effective leadership is the way it helps individuals achieve their hopes and dreams.

ing outside of the box; sometimes it is destroying the box. Great universities are secure enough in their leadership to be flexible in their planning and practices.

A third way to act like a great university is to do all you can to make others see you as a great university. Perception is reality. If we offer classes, but do not have the necessary facilities, instructors or educational resources, then students feel ripped off. If we answer our telephones rudely, if we are not helpful, or if we do not return calls, then the public sees us as unprofessional. If our letters

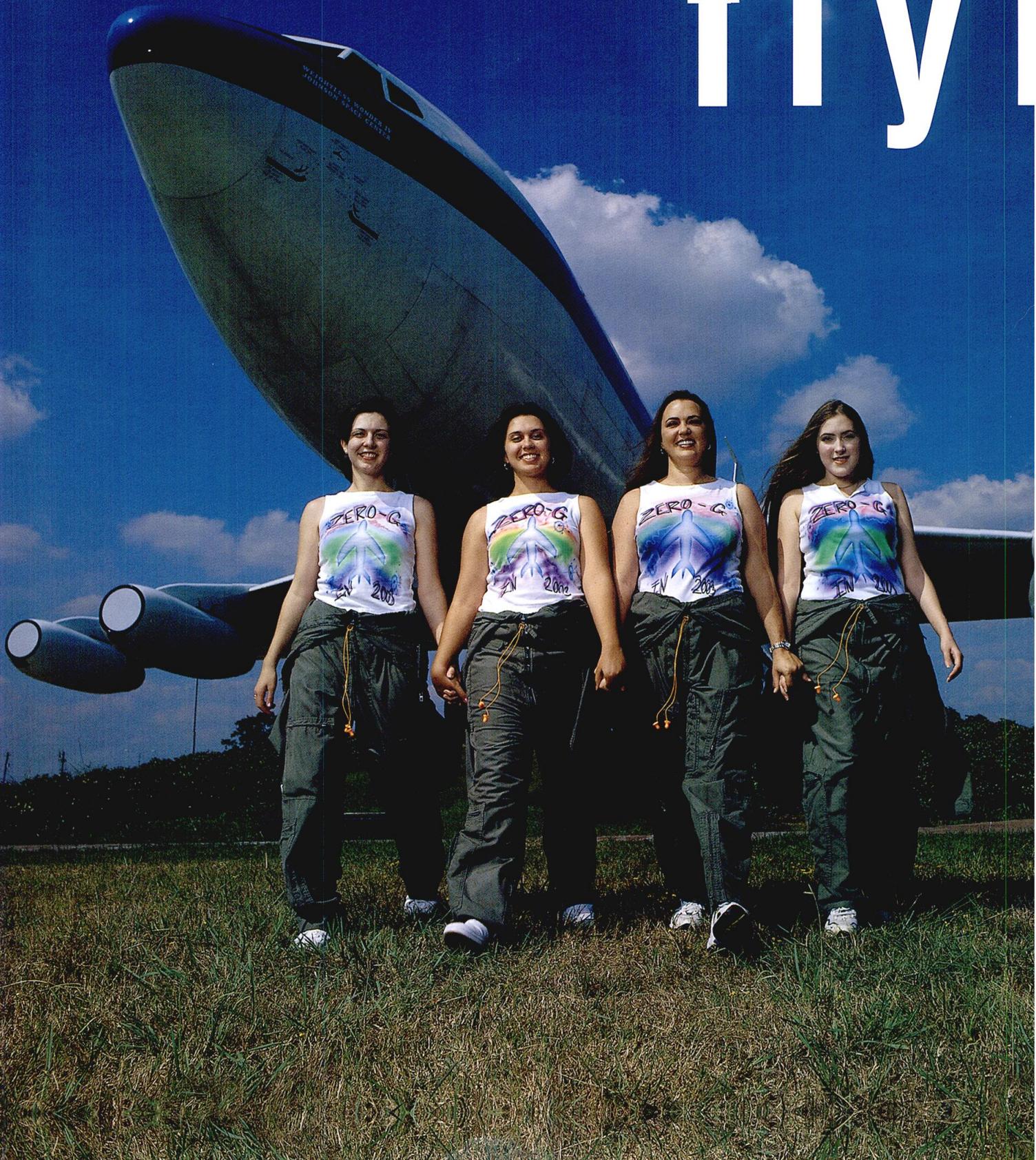
and official publications do not adhere to the high standards of great universities, then alumni and potential donors see us as a second-rate institution.

Staying connected with all of our constituencies is vital for the survival of our institutions. The UH System is nearly a billion-dollar-a-year enterprise, and just as with any other organization, we have to stay connected to our stakeholders to find out what is important to them and how we can meet those expectations. Students want to graduate and proceed with their hopes and dreams with the least amount of hassle while spending the least amount of money. Parents want a safe environment for their students. Our alumni want alma maters they can be proud of and that they are willing to support.

I am confident that by working together and by listening to each other we will move our universities to their next levels of excellence. Keep in mind that we will make some mistakes along the way. We will learn from those mistakes and become stronger because of them — both as institutions and as individuals. I am really looking forward to working with all of you, and together we will succeed.

Jay Gogue assumed the offices of chancellor of the University of Houston System and president of the University of Houston on Sept. 2, 2003, becoming the system's seventh chancellor and the university's 12th president. A native of Georgia, the chancellor received his bachelor's and master's degrees from Auburn University and his doctorate from Michigan State University. Chancellor Gogue began his distinguished career in higher-education administration in the mid-1980s at Clemson University, followed by leadership roles at Utah State University and New Mexico State University.

flyt



ng high

STUDENTS TAKE TO THE SKIES FOR SCIENCE

written by karen barbier

In their olive drab flight suits, Aileen and Megan Ebadat, Sonya Morgan and Carolyn Jessop look like pilots in training. But, as the saying goes, looks can be deceiving. The four UHCL students donned flight suits this summer when they were selected to participate in the KC-135 Reduced Gravity Student Flight Opportunities Program, which allowed them to ride and work on experiments in a weightless atmosphere.

"My initial interest in submitting a proposal came after I met some people who were involved in the KC-135 program, and they were pushing me to submit a proposal," explains Aileen Ebadat, the older of the two Ebadat sisters and the leader of the KC-135 student team, Reflexions.

NASA started the Reduced Gravity Program in 1959 to investigate human and hardware reactions to operating in a weightless environment. The reduced gravity environment is obtained with a specially modified KC-135A turbojet transport, which flies parabolic arcs to produce weightless periods of 20 to 25 seconds.

Aileen, 20, has always been interested in biology, but she never considered becoming a doctor until she started taking college classes and excelling in them. Then she realized that, yes, she could become a doctor.

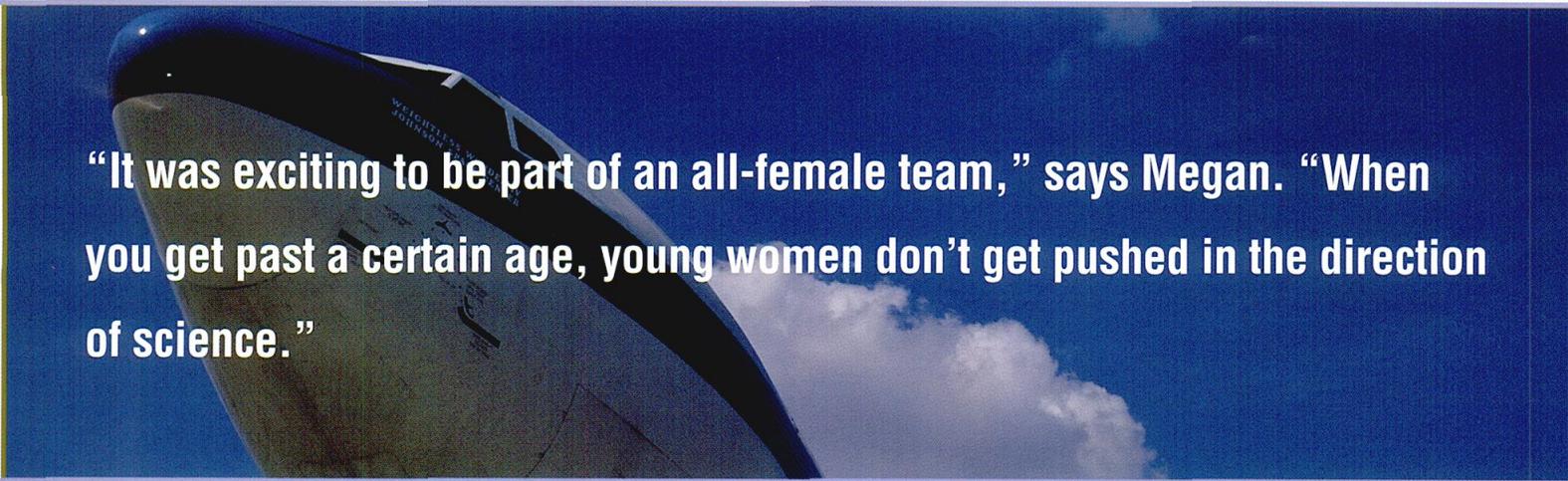
Aileen was intrigued by the idea of connecting her interest in biology with the opportunity of riding in the KC-135. After a lot of hard work, and multiple meetings with UHCL Associate Professor of Biology Richard Puzdrowski and Professor of Biology and Chemistry Ron Mills, Aileen discovered the right project – F.I.N.G.E.R. (Finger-flexion Investigation in Gravitationally Exempt Realm).

"When I researched the ideas that they (Puzdrowski and Mills) suggested, I came across this spinal cord excitability question," says Aileen. It was fairly new and one particular experiment had just come off of the International Space Station. What an opportunity! I actually was able to contact this particular researcher, and he has been very supportive."

In addition to the support from UHCL professors, the group also received help from San Jacinto College, especially the math and science faculty.

Finding her team, which according to the Reduced Gravity Student Flight Opportunities Program should include only a limited number of students needed to complete the experiment, was not too difficult for Aileen. Her 17-year-old sister, Megan, was a natural choice since she, too, has an interest in biology. Morgan, 30, joined the team when Aileen remembered her as "a good student and a real adventurer" from a physics class at San Jacinto College.

SISTER ACT: UHCL student Aileen Ebadat (l) led the Reflexions team that participated in the KC-135 Reduced Gravity Student Flight Opportunities Program operated by the NASA Johnson Space Center. Team members include Aileen's sister, Megan Ebadat, and sisters Sonya Morgan and Carolyn Jessop.



“It was exciting to be part of an all-female team,” says Megan. “When you get past a certain age, young women don’t get pushed in the direction of science.”

“Aileen contacted me and once I watched the video about the KC-135 program, I was hooked,” says Morgan.

The fourth member of the team was added when the 23-year-old Jessop, Morgan’s sister, expressed an interest.

“It was exciting to be part of an all-female team,” says Megan. “When you get past a certain age, young women don’t get pushed in the direction of science.”

The group’s F.I.N.G.E.R. hypothesis suggested that repeated exposure to zero gravity will cause a decrease in spinal cord excitability. The team says that if messages are being sent from the brain for an increase in muscular contractions and the excitability of the motor circuitry is reduced, exercise becomes more difficult for the astronauts as more effort is required to maintain the same level of exercise.

“Not only would this piece of information help us understand more of what really happens to the body in space, but it could also help make exercise more efficient for the astronauts by rethinking the exercise program that exists currently,” says Aileen.

Puzdrowski concurs and adds that although reflex-testing experiments completed aboard the International Space Station indicate there is a decrease in the excitability of the spinal cord motor circuitry within the first 24 hours of continuous weightlessness, no one knows exactly when the decrease in excitability begins.

“This decrease in spinal cord motor circuit excitability affects muscle performance and the response to stimuli,” explains Puzdrowski.

“Others have seen a decrease after 24 hours, but during our experiment, it was much more immediate,” says Aileen.

As for the actual experience of riding in the KC-135 “vomit comet,” all four of the team say the flight was something they will never forget.

“It was incredible; when you hit ‘two-gs,’ your stomach goes to your throat” says Morgan, who explained that all of the teams were divided with half going up on one flight and the other half going up in the next. Morgan flew with her sister, Jessop, while the Ebadat sisters rode together.

“They thought I would be the one that would be sick,” says Jessop. “But I actually enjoyed it and sat in the cockpit while landing.”

The team’s involvement with the KC-135 included several days of pre-flight training before their actual two-hour flight. But the end result was worth it, explains Aileen.

Each team is required to submit a report on their experiment to NASA.

“If it is considered outstanding, the astronauts will look at the report to see how it can help them,” adds Megan.

The team plans to finish their degrees and pursue careers in their respective fields, which includes medicine for Aileen, international business for Megan, dentistry for Morgan and finance for Jessop.

“I had never considered the possibility of going into aerospace medicine until I really got into this project and the NASA community,” says Aileen. “But now I’m saying, ‘where do I sign up?’”

away up, up and

While the Reduced Gravity Program has been around for a few years, the Reduced Gravity Student Flight Opportunities Program began in the early 1990s. Since that time, approximately 350 student teams and 1,700 student fliers from around the country have participated.

“They learn more with this project than anything they’ve seen in their entire lives,” says Donn Sickorez, Johnson Space Center education coordinator for the program. “Most of them never knew what it was like to write a proposal, budget, find funding, fly the experiment and then go out and talk about it.”

Sickorez adds that one recent participant wrote a letter to him that seems to sum it up.

“He wrote that it was an ‘unmatched opportunity to experience engineering,’” says Sickorez. “And that is exactly what it is. The students have had the classes and now they can put everything they’ve learned into practice.”

“We want them to be the next Nobel Prize winners.”

Student Leadership Institute

**Building tomorrow's
leaders today**

Volunteers kicked off the Student Leadership Institute's first UHCL Community Outreach Day by washing dogs, building homes and beautifying the campus. UHCL faculty, staff and students as well as community members spent Saturday, Aug. 30, volunteering at the Houston Humane Society, the Baytown Habitat for Humanity and UHCL.

SLI provides students with opportunities to develop and enhance a personal philosophy of leadership while promoting student learning, personal development, volunteerism and the exploration of leadership trends. The institute offers a student leadership workshop series; an annual student leadership conference; a women and leadership symposium; a summer leadership retreat; and the dessert dialogues series, which brings together students and leaders from UHCL and the community. To learn more, visit SLI at <http://www.uhcl.edu/stuserv/SLI/sliindex.htm>.



DOG WASH: UHCL Community Outreach Day volunteers offer a helping hand by bathing the Houston Humane Society's canine residents.

Kim Herhold



President

William A. Staples

Senior Vice President and Provost

Edward J. Hayes

**Vice President, Administration
and Finance**

Michelle Dotter

**Associate Vice President for
University Advancement**

Dion McInnis

Executive Editor

Theresa Presswood

Managing Editor

Sheshe Giddens

Associate Editor

Karen Barbier

Editorial Assistant

Carol Pruitt

Designer

Rebecca S. Trahan

Contributing Photographers

Karen Barbier

Sheshe Giddens

Kim Herhold

Beryl Striewski

Art Contributor

Larry McEntire

Contributing Writers

Karen Barbier

Andrea Dunn

Sheshe Giddens

Theresa Presswood

Egret Advisory Board

Darlene Biggers

Paula Cook

Kathy Dupree

Tom Fox

Loretta W. Gurnell

Katherine Justice

Resa Ott

Jana Stafford

Taleen Washington

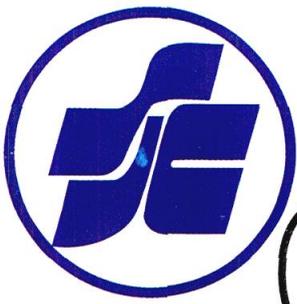
Egret is published by the University of Houston-Clear Lake, a component of the UH System. UHCL serves junior, senior and graduate students of the upper Texas Gulf Coast. Address correspondence to UHCL Office of Communications, 2700 Bay Area Blvd., UHCL Box 199, Houston, TX 77058, 281-283-2015, news@cl.uh.edu. Articles may be reprinted without permission, but with attribution.

Volume 10 Number 1
Fall 2003

L'egret

University of Houston  Clear Lake

THROUGH
THE LOOKING
GLASS



OPEN

Volume 4
Issue 2

Communiqué

San Jacinto College South

March 2003

San Jacinto South Scientists Take Off to do Experiments in Weightlessness



Morgan, Ebadat, Ebadat, and Jessop in front of a KC-135 at Ellington Field

They call it "Girl Power." Three San Jacinto South alumnae and one current student will fly on NASA's KC-135, better known as the "vomit comet," in July 2003. Aileen Ebadat, Megan Ebadat, Sonya Morgan, and Carolyn Jessop will conduct an experiment to determine the effects of microgravity on the human body.

Aileen Ebadat and Morgan are juniors and biological sciences majors at UHCL. Jessop, also a junior at UHCL, is

majoring in accounting, and Megan Ebadat is a freshman at South, majoring in international business. The Ebadats are sisters, as are Morgan and Jessop.

Aileen Ebadat had the initial idea to try to get an experiment accepted. She and Morgan were in the same physics class at San Jac South. They both decided they didn't know enough about physics yet, so they began looking for other ideas for experiments. They sought input from SJC professors Catherine O'Brien and Cynthia Hoobler, but finally settled on an experiment in reflexes suggested by a professor at UHCL.

The experiment will measure how quickly reflexes diminish in zero gravity. It is known that reduced gravity affects reflexes. But how quickly the effects take place has not been determined. "Most reflex checks are made after eight hours, because the astronauts have other things to do at the beginning of a flight. We will check after two

Cont. on pg. 4

In This Issue:

A Message From Our President 2

TWC Skills Development Grant 3

Meet Our New Adjuncts 3

Honors Logo Winners 3

Dual Credit Statistics 4

Piper Award Nominee 4

Nisod Winners Announced 4

Accolades, Applause, & Awards 5

Students Read at Childcare Center 6

Happening on Campus 6

Striving for Excellence



An Interview with Dr. Linda Watkins

The following interview is the first in a series conducted by Vickie Hodges with Dr. Linda Watkins, Interim President of San Jacinto College South.

What is the Role of a Community College Campus President?

I believe that it is the responsibility of the President to provide leadership to the campus by expressing a clear vision, both to the campus and to the community. The President should passionately believe in what we do as a community college and should be able to develop community—both on and off of campus.

Although some would say that a President is responsible for the development and administration of the campus budget, personnel, facilities, and quality of instruction/administration, I would prefer for us to envision each of us as responsible for what we do and for what we stand for in the community. We are collectively responsible for our success as well as for areas in which we need to improve.

Dr. Watkins, What is your vision for the campus this year?

More than ever, I would like to emphasize "Building Community." The community college is a great representation of democracy—we offer open access and affordability to many students who would not otherwise have opportunities for higher education. We offer students the opportunity to start here and go anywhere. What a difference we make in lives! I see evidence every day that San Jacinto College South embraces excellence in education. Faculty and staff at this institution

believe in quality; they are also extremely creative and willing to work with students on a one-to-one basis. Every day I see examples of faculty and staff on this campus working to ensure student success. I would like for us to work on connections: connections between the campus and the community, between departments, between instruction and support services, between colleagues. We need to think of learning in a holistic way as we value each other and strengthen our interdisciplinary approach to the curriculum.

How do you think the state budget cuts will make your role as President more challenging?

It will be difficult, to say the least. Education is always more enjoyable when there is money to go around. Everyone is nervous and I know that rumors are flying. However, as President I will do my best to see that our cuts do minimal damage to our front line—teaching and learning. We need to work together to streamline operations and to seek alternative sources of revenue. Most importantly, we do not need to panic; we can face the challenges before us. More than ever San Jacinto South must pull together as a family. A family is a good analogy because when a family faces a crisis one of two things happens: it falls apart, or it becomes stronger and the members more committed to each other. That is not to say that we can't disagree from time to time. Every family has a few dysfunctional moments. But if we recognize that everyone has something to contribute and that we're better off working together rather than going off on tangents, we'll survive—more than survive, we'll thrive. Teamwork and openness are essential in order for us to do what is best for our institution at this crucial time.

What do you think is the one most important task that a President does?

I think leading by example is most important. We all need to believe in what we do with passion and to represent our mission well. We need to be "who we are" and to spread our good news to each other and to the community.

To be more specific, however, I think the most important task for which a President is responsible is the hiring process. We need work together to hire good people and to then let them do their jobs. We also

need to recognize achievement once these people are on board. I believe that our primary "constituent" is the employee. Each person on this campus needs to understand that what he or she does is meaningful. Most importantly, employees need to be encouraged to continue their own learning and growth. Satisfied employees—whether faculty, staff, or administrators—enjoy coming to work and they take care of their responsibilities well. They also take great pride in being associated with the excellent teaching and learning processes by which this campus is known. It is my intention to build upon our fine past and to provide leadership for an even brighter future.

CETL Renamed

Effective Spring 2003, the South Campus Center for Excellence in Teaching and Learning (CETL) will be known as the Ornetta Perry Center for Excellence in Teaching & Learning.

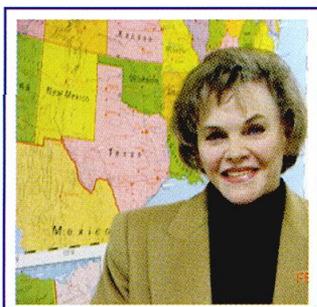
The Center has been named in honor of benefactor Robert (Bob) Perry's mother, Oretta Perry. A wall plaque will be displayed in the CETL office in the new Interactive Learning Center, which is scheduled to open late this summer.

Perry's generosity has established two separate funds. An initial donation of \$50,000 will fund student scholarships. The scholarship fund recipients are to be identified through the Inclusion Task Force on South Campus. The applications will be forwarded from the Foundation to Joseph He'Bert, Financial Aid Director, who will submit them to the Task Force chairperson for selection. The Task Force will select two students who will receive \$250 each semester. Scholarships will be funded through the interest, with the principal to remain intact.

A second fund in the amount of \$12,500 will support South Campus Leadership initiatives. The South Campus Leadership funds are to support quality instruction by providing enhanced opportunities for faculty development. These funds will support Outstanding Faculty Teaching. Dr. Linda Watkins and Dr. Belinda Fisher will coordinate the guidelines and recommendations. Both funds are administered by the Foundation through recommendations from South Campus.

*Open Communique' is produced by:
Vickie Hodges, Editor
and Dionicia Hoppe, Layout and Design*

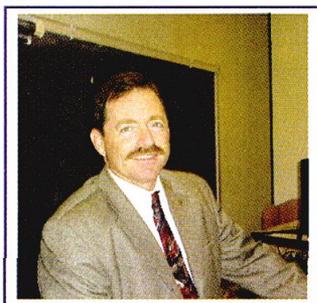
Meet Some of Our Outstanding Adjuncts



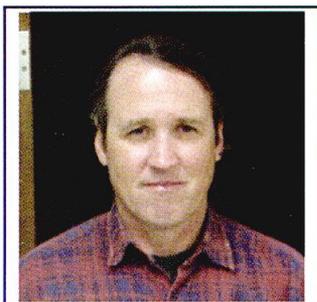
Fran Coppinger, Government
3 years at SJC South
Pearland, Texas
Recently selected as a Trailblazer in our community for Women's History Month, Fran was a gubernatorial appointee to the Texas Ethics Commission. She has also worked with the Texana Collection in our library and the San Jacinto Foundation Board.



Valerie Goode, Cosmetology
9 years at SJC South
Spring, Texas
Valerie presently manages her own saloon in the museum district in downtown Houston. Working as a full-time adjunct on our campus, she has been a cosmetologist since 1989.



Michael Baird, Psychology
9 years at SJC South
Pasadena, Texas
Having served for 24 years as a Pasadena policeman, Michael is presently a sergeant in the public information office. Teaching psychology from his perspective brings practical knowledge to the students.



Stan Mays, Biology
13 years at SJC South
Manvel, Texas
Stan has served as the Curator of Reptiles and Amphibians at the Houston Zoo for the past 21 years. He brings a variety of knowledge to the classroom through his experiences working with both large and small animals.

Watch for more adjunct profiles in our next issue!

C.E. Receives TWC Skills Development Grant

San Jacinto South Campus' Continuing Education's Center for Business Development, in partnership with PolyOne Corporation, was awarded \$51,609 by the Texas Workforce Commission's Skills Development Fund Grant for the Process Technology Certification Program.



Dr. Watkins and Renae Gray accept a check from the PolyOne Corporation

PolyOne, a major producer of plastics, has a plant in Seabrook, Texas as well as other locations throughout the state. To meet the PolyOne's workforce training needs, San Jacinto College South will provide an on-site Process Technology Certification Program. The program is designed to provide employees with the skill sets needed for four career tracks identified by PolyOne Corporation. The Texas Workforce Commission's Skills Development Fund Grant will pay for all employees' expenses for the extensive three-month re-training program. PolyOne will provide an in-kind match for the program by covering the program participants' salaries and benefits during the training period.

Parking Relief on the Way

An additional 150 parking spaces are slated to be ready by the beginning of Summer I. The new lot will be located on the north side of the campus by the tennis courts.

Students Awarded Scholarships for Outstanding Honors Logos



Lou Brock's Commercial Art classes took on the challenge of creating a new logo for the Honors Program. First prize was awarded to Rebecca Garcia-Franco, her winning logo is pictured here. Her scholarship amount is \$150. Second prize of a \$100 scholarship was awarded to Jeremy Wilson. Third place, \$50 scholarship, was awarded to Scott Wilson. Honorable Mention was awarded to Audrey Aguirre.

"I was overwhelmed by the caliber of the students' work," says Dr. Eddie Weller, Honors Program Director. "Originally the Honors Program was only going to award one prize. After we saw the work we changed it to four awards, including three scholarships."



pictured from left to right, Lou Brock, Audry Aguirre, Jeremy Wilson, Rebecca Garcia-Franco, and Dr. Weller

San Jacinto South Nisod Winners Announced



Carolyn Keck, Renae Gray, Gaylyn Scurry, and Detra Merino

Carolyn Keck, Gaylynn Scurry, Renae Gray, and Detra Merino have been selected the 2003 National Institute for Staff and Organizational Development (NISOD) award winners from South Campus. NISOD awards are given to those people who have demonstrated a true commitment to "the primacy of teaching" or enhanced "the promise of the open door" institution.

Nominations for the awards were solicited from all South employees. A committee selected winners based on how well the nominees met established criteria.

Each award recipient will receive a pewter medallion and an Awards Booklet that lists the names, titles, and colleges of all recipients.

NISOD (National Institute for Staff and Organizational Development) began in 1978 and presented the first Excellence Awards in 1989.

Fast Forward Through College - SJCS Dual Credit Statistics

These charts show the growth of the Dual Credit Program for the past four years and for this year in particular.

Semester/Year	1998	1999	2000	2001	2002	2003
Fall	7	42	58	99	143	
Spring		41	43	88	101	170
Summer I		65	84	94	93	
Summer II		39	41	58	84	
Totals		187	226	339	421	

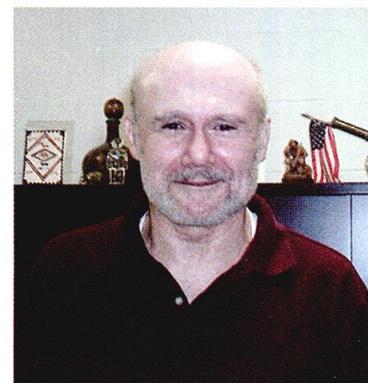
Categories/ Semesters	SS1 2000	SS2 2000	Fall 2000	Spring 2001	SS1 2002	SS2 2001	Fall 2001	Spring 2002	SS1 2001	SS2 2002	Fall 2002
Students	84	41	58	88	94	58	99	101	93	84	143
Number of Courses	103	49	91	121	127	70	155	157	139	115	246
Hours	280	143	269	348	383	212	469	463	399	316	735
GPA	2.87	2.91	2.98	3.10	3.22	3.04	3.18	3.10	3.10	3.20	3.23
Completion Rate Percent	94.2	98	94.4	89.4	97.7	93.9	96.6	93.6	94.5	92.7	94.3

Dr. Sanford Kanter Nominated for Minnie Piper Award

Dr. Sanford Kanter is the South Campus Minnie Stevens Piper Award nominee for 2003. Kanter, a history professor, has been teaching at South since 1980. The Piper Awards recognize superior teaching, and nominations are solicited from two- and four-year colleges and universities throughout Texas.

Kearby Lyde, who nominated Kanter, says, "He has an unquenchable thirst for knowledge and the ability to articulate that knowledge to his students. His warm personality and genuineness aid him in developing rapport with both his students and the faculty here at South."

Dr. Kanter has also received the San Jacinto College Scholarly Achievement Award and the NISOD Award.



Young scientists cont. from pg 1
hours," said Aileen.

The women began writing their proposal in July of 2002, and submitted it in November 2002. They got the call that it had been accepted in December 2002.

When asked how they reacted when they got the word that the experiment had been accepted, they all began to laugh. "Oh my goodness! I called her [Sonya] at work; we were on the phone for the whole day!" Aileen said. "Thank goodness it was a Friday," Sonya noted. "We jumped for joy," added Megan.

The "girl power" team will be in good company. Also flying experiments this year on the KC 135 will be MIT, Purdue, Harvard, CIT, Johns Hopkins, Texas A & M, Texas Tech, and the USAF Academy. Seventy-one teams total have been accepted for the Reduced Gravity Student Flight Opportunity Program.

All four women are continuing with their college educations, carrying full loads this semester.

They have created a website about their project: http://www.geocities.com/reflexions_2003/Team.html

Local

Local student group makes plans to go zero-g

By GARRETT BRYCE
Journal Staff

A group of local college students will get their feet off the ground – in more ways than one, in July.

The project flight group "Reflexions," made up of four college women from San Jacinto College South and University of Houston - Clear Lake, were accepted to run their experiment in a simulated micro-gravity environment. To do that, the students will board NASA's KC-135 aircraft, known as the "vomit comet" at Ellington Field. The "vomit comet" will then lift off, and simulate micro-gravity through a series of dives that negate earth's pull on the passengers in the plane.

The group, made up of Aileen

Ebadat, Sonya Morgan, Megan Ebadat and Carolyn Jessop, will split into two separate teams for two different flights.

The aim of "Reflexions" is to further study the effects of micro-gravity on the human body.

"Although much research has been carried out in the realm of micro-gravity, relatively little is known regarding its effects on the human body," the team wrote in their abstract proposal for the project. "This weightless environment is new and unfamiliar to the human body and thus it must adapt to the changes."

The particular focus of the students' project is spinal cord excitability, or the ability of the spine to send signals from the brain to the muscles in the body. They aim to see if motor skills are affected by the weightless

environment.

The dive of the KC-135 will provide as long as 30 seconds of micro-gravity for the experiment to take place. While it seems little time to accomplish anything, many experiments are accomplished on the plane. "It's long when you're doing it," Aileen Ebadat said.

The group will also be experiencing weightlessness several times over, as the plane makes several dives during its two flights. The group had worked on their proposal from July to October of 2002, and found they were going to be taking a seat on the July flights in December.

One of the challenges was finding the right idea for their experiment.

"It took us a long time to get the idea formed," Morgan said. "We wanted to do physiology, but didn't know what."

Examining spinal cord excitability was not only a good enough idea to get them on board for a mission, but also on board as one of the few experiments in biology on the plane.

"Biology is definitely in a minority on the KC-135," Aileen said. In addition to the flight, the group will be doing outreach efforts to local areas, sharing their experience with youth.

They will visit with Girl Scout packs, and are involved with the "Helping One Student To Succeed" mentor program where

they will visit elementary schools in the area. The all-female team hopes to inspire girls through their example of hard work and accomplishment. Training has started for the trip, and the teams will have lessons on safety and use of medicine in case they get ill on the "Vomit comet."

They were introduced to flight experience with a video tape of previous trips, which did have an effect on some of the group

members. "My palms were sweating when I watched it," Megan Ebadat said. When all is done, however, the group plans to enjoy the experience of the flight and weightlessness.

"Not too many people can claim that they've done this, other than astronauts," Aileen Ebadat said. The group is pushing forward with their project after the incident involving the Space Shuttle Columbia. Aileen

Ebadat said the loss of the shuttle was a shock, as the group was going to meet the crew of Columbia on their return to Ellington Field.

One space-related project, last weekend's launch of a test rocket for the Amateur Spaceflight Association, was postponed until March. The launch, when it does occur, will be from the Gulf Coast Regional Spaceport in the southern part of Brazoria County.

LEARN French!
German! Russian! Spanish!
Chinese! Japanese! Portugese! Italian!

ENROLL NOW!
 Classes Start: **March 3, 2003**
University of Houston ■ **Clear Lake**
281-283-3033 www.cl.uh.edu/fl

Bigger & WE'RE BACK!
"NOW OPEN"

WEEKLY UPDATE



Mock Registration Deemed a Success

After holding the first mock registration for the student service module of the Banner® system, administrators are encouraged that the system will be ready for the first-ever online registration this summer.

The mock registration tested many aspects of the module in preparation for the go-live date the week of May 12.

More than 500 various scenarios were used to simulate real-life registration situations. These included financial aid, calculation of tuition and fees, and class changes.

Once the system is live, students will be able to register for credit and continuing education classes via the Web as well as make fee payments, search class schedules, retrieve term grades, and do degree planning.

A second mock registration will occur the week of March 3 and a third is scheduled for the week of April 14.

The student services modules for Banner® include recruitment, admissions, general students, general persons, registration, administration history, catalog, and schedules.

North Medical Club Sponsoring Play

The medical careers club at the North Campus is sponsoring "Matters of the Heart," an organ donor-related event, at 1 p.m., Tuesday, Feb. 25 in the monument room.

The play is about a family who has to deal with the subject of organ donation.

Actors working with the Museum of Health and Medical Science will participate in the 20-minute play.

More information is available by calling x7395.

South Students to Fly on NASA's KC-135 Aircraft

Four San Jacinto South students, three former and one current, have been accepted into NASA's KC-135 student flight program.

Aileen Ebadat, Megan Ebadat, Sonya Morgan, and Carolyn Jessop will fly in July 2003. The aircraft simulates a zero gravity environment by free falling for 25 seconds.

The team will conduct an experiment to determine the effects of microgravity on the human body.

Search Committee to Hold First Meeting

The San Jacinto College chancellor screening committee is holding its first meeting next Thursday, Feb. 27.

The meeting is in orientation format, with members discussing their responsibilities and reviewing the qualifications for the chancellor position.

The committee is made up of college faculty, staff, and administrators, plus community leaders.

In December, the San Jacinto College Board of Regents hired Executive Resource Consulting Services (ERCS), an executive search firm, to assist in finding a chancellor to replace Dr. Jim Horton. Dr. Bill Lindemann was named interim chancellor by the board at that time.

The college's committee works with ERCS during the search, assisting them with details such as making sure candidates meet qualifications and that they demonstrate an understanding of the job of being chancellor.

During the past three years ERCS has successfully assisted five Texas-based community colleges in finding a new chief executive officer.

The board of regents ultimately desires a chancellor that understands the legislative environment in Texas as connected to education, and one that can run a large, multi-campus community college district.

San Jac Central Theater Presents 'Gypsy'

The San Jacinto College Central theater department is presenting "Gypsy," for its 2003 spring musical.

The play is based on the memoirs of Gypsy Rose Lee, a famous burlesque stripper. The story includes Lee's relationship with her overbearing mother, who pushed her into stardom after Lee's sister resisted her manipulations.

Performances begin at 7:30 p.m., Feb. 28, March 1, 7, and 8, with a 2:30 p.m. matinee performance March 2. All shows are held in Slocomb Auditorium on the Central Campus. Ticket prices are \$10 per person.

Two separate auditions were held for the play, netting more than 30 men, women, and children, plus one dog, from the area to participate in the musical.

Dr. Jerry Ivins is directing the play.

More information about performances and ticket purchasing is available by calling x1828

Vol. 2, Number 18
Feb. 20, 2003

CCRI Update

Community College of Rhode Island

Emergency management courses respond to terrorism

You may think that post-September 11 America represents a whole new world of risks. Tell that to the victims of the French Revolution, or the creators of the Trojan Horse, counters George Hickey, instructor for the new CCRI course Introduction to Terrorism, which will premier this summer.

"The idea of terror goes way back into history, although we continue to change the names," says Hickey, a former bio-medical service officer and disaster response specialist.

Using real-life examples of terror tactics, such as the Munich Olympics and the Oklahoma City bombing, Hickey will show his students how terrorism works "to confuse and confound," oftentimes to demonstrate a political or religious point of view.

That religious fanaticism is one of the components of the latest terrorist threats that Hickey finds

most frightening. "You're dealing with the Islamic fundamentalists, where as part of their religion they believe that suicide is really martyrdom and a laudable act, so they proceed to do things that we (Americans) would consider were outside of our cultural background." Couple this with the fact that "it is very hard to identify the terrorists until the terrorists make themselves known," and you have an ideal climate for confusing and confounding.

While Hickey does warn students to be alert and aware of activities that seem outside of the norm, he also wants them to continue to do all the things they normally do. "To cease to do those things is to let the terrorist win," he says.

Introduction to Terrorism is one of three new CCRI courses focusing on disaster response.



Kent Hospital employees conduct a disaster drill last July.

Fundamentals of Emergency Management, which addresses the integration of local, state and federal resources in the event of either a natural or a man-made disaster, was first offered last fall;

Bioterrorism, a look at ways to contain and respond to a weaponized biological agent, will follow in the fall of 2003.

This series of courses grew from a collaboration between the college

and the Federal Emergency Management Agency's Higher Education Project, which is working to promote college courses

see **TERRORISM**, page 2



Kathryn Zuromski, Sabrina Green, Katie Savasta and Kate Venturini (l-r) pose in a NASA hangar.

Students conduct NASA experiments

Gravity: n. 1) The force of attraction by which terrestrial bodies tend to fall toward the center of the earth 2) heaviness or weight*

Zero gravity: n. The condition in which the apparent effect of gravity is zero, as on a body in free fall or in orbit*

* Random House Webster's College Dictionary

CCRI students Sabrina Green of Cumberland, Katie Savasta of Glocester, Kate Venturini of Glocester and Kathryn Zuromski of Foster defied gravity this March when they participated in the Reduced Gravity Student Flight Opportunities Program at NASA's Houston headquarters. Joining the four women were a tank full of crustaceans they planned to monitor at varying levels of gravity. The students conducted their experiments aboard a specially outfitted Boeing KC-135 that simulates weightlessness by flying in a parabolic pattern to create forces as low as zero gravity. Among NASA insiders, the airplane is known as the "Vomit Comet."

The four CCRI students were chosen to attend the flight program after submitting their 47-page proposal, "The Effects of Weightlessness of Copepods and Crayfish," to NASA this fall. CCRI's team withstood some tough competition to gain admission to the program. Among the 72 proposals accepted were those

from student teams in prestigious technical programs at California Institute of Technology, Embry-Riddle Aeronautical University, Georgia Institute of Technology, Brown University, Johns Hopkins University, Purdue University, Texas A&M University, the United States Air Force Academy and the United States Naval Academy. The CCRI women were one of only three two-year college teams accepted.

"I think that this proves the fact that you can get out of CCRI whatever you're willing to put into it," says Venturini. "We've all worked really hard during our time here, and we've had some great instructors who really encouraged us to aim high. We've all made a great head-start for when we transfer to four-year (programs)." The students were also particularly proud of the fact that they had

see **NASA**, page 6

Adult Education Fair at Liston demonstrates community need

ESL, GED. These acronyms stand for more than the programs English as a Second Language and General Educational Development. For the thousands of Rhode Islanders who enroll in such programs each year, ESL and GED can spell opportunity.

Providence's Mayor David Cicilline spoke of opportunity when he addressed a crowd of 400 potential ESL and GED students attending the RI Workforce Literacy Collaborative's Adult Education Fair. "Adult education can improve the quality of your lives and the lives of your families," the mayor said.

Collaborative Chairperson Cindy Mlyniec was more specific about the benefits that the 30 different adult education agencies gathered in the college's atrium could provide. "We're here to help you get the job, improve the job skills you have, or get a better job."

Some agencies, such as Progreso Latino, rented buses to bring students to this morning of one-stop literacy shopping. Progreso Latino's Simone Butterworth explained that a literacy fair is an important way for adults with limited English skills to learn what resources are available to them. "It is much better for students to come and ask questions on their own than for us just to give them the information and the phone numbers. They don't like to call on the telephone because they don't speak English so well."

What kind of questions were the students asking? "Some want translations, such as 'What is GED?'" said Chris Hedenberg of the

Workforce Literacy Collaborative. "Most people we've talked to are more advanced in their skills than what we have here, but they want to know for their families and their neighbors."

The demand for services is easy to see. Two hours into the event, Yvette Kenner of Literacy Volunteers of America said, "I brought 250 business cards with me and I have none left."

Sharon Alexander-Reyes who runs the Dorcas Place bridge program, says "There are not enough resources. They need more. They are hungry for education." Like a lot of other agency representatives, Alexander-Reyes says that her classes, which run both days and evenings, have wait lists, while the program's CCRI drop-in center is operating at capacity.

A recent report by the Nellie Mae Education Foundation, entitled "Rising to the Literacy Challenge: Building Adult Education Systems in New England," puts real numbers behind Alexander-Reyes' observation. According to the foundation, 41 percent of New England adults lack literacy skills necessary for living and working in the 21st century. And when it comes to the Ocean State, the story becomes more distressing. "Among New England states, Rhode Island has the highest percentage of residents below basic literacy standards. Yet the state contribution to adult basic education services is the smallest in New England," the report states.

CCRI President Thomas D. Sepe sees this as another compelling

Terrorism

from page 1

in emergency management. As early as two years ago, Project Manager Wayne Blanchard visited with CCRI and state officials to address the need for a college-level emergency management program in the state of Rhode Island. Because CCRI already has a successful track record for training first-responders—from the nurses to the fire fighters and EMTs—FEMA saw it as the obvious site for such a program.

Why does FEMA see a need for this kind of training on a college level? "It's important," says Blanchard, "because of where the country is with disaster losses. We're spending tens of billions of dollars rebuilding communities after disasters, and the costs are doing nothing but going up."

Blanchard continues, "What we're doing today in the name of emergency management is not as adequate to the task as what it needs to be and what we would

like it to be." Unlike today's responders, who often learn how to handle disasters on the job, tomorrow's responders may have the benefit of preparation *before* a disaster occurs.

Frank Colantonio, a firefighter and educator who teaches Fundamentals of Emergency Management, explains that the 15-week curriculum is an extension of a core program organized by FEMA. This allows Colantonio to take advantage of the government agency's training videos and Web-based information. Colantonio also uses guest speakers—from hospitals to home safety organizations—so he can offer his student differing vantage points of disaster management.

Just as a real-life disaster touches innumerable local, state and federal agencies, so too can disaster-training benefit a wide audience. Dean of Nursing and Rehabilitative Health Maureen McGarry explains, "The training appeals to a broad spectrum of

students, health care professionals, fire personnel, department of health personnel, emergency management workers, even administrators of schools." The courses are intended not just for professionals but also for students interested in pursuing a career in emergency management.

One piece of advice all the instructors of the CCRI emergency management courses share: Be prepared. "The best thing you can do is have a plan," says Colantonio, and he does not mean only in case of a terrorist attack. "What happens if the bridge gets closed? Who's going to pick up your kids?" he offers one scenario. Or "We had some bad snowstorms this winter. What if you lose your power for three days? How would you cope?"

Some advice makes common sense in both war and peace time.

reason for collaborative efforts like the Adult Education Fair. "Networks of service providers like the Rhode Island Workforce Literacy Collaborative become increasingly important at a time when the demand for adult literacy training is rising and funding is insufficient. Collaboration allows organizations throughout the state to build on shared experience in order to tackle pressing issues in adult education and employability."

It is those dreams of higher education and better employment

opportunities which motivated the droves of eager attendees to visit the fair at the Liston Campus, where CCRI advisors offered workshops and campus tours.

Martine Cherry, a Haitian immigrant affiliated with the Genesis Center, could hardly contain her excitement when she explained that she wanted to enroll in a GED class now, so she could continue her education at CCRI later. "I want to make my English good to study," she explained.



Visitors to the RI Workforce Collaborative's Adult Education Fair receive information from Dorcas Place representatives.

CCRI Update is a quarterly newsletter produced by the Community College of Rhode Island Department of Public Relations and Publications.

To submit information for publication, contact Laura Hart at lhart@ccri.edu or at (401) 825-1175. You may also fax information to her attention at (401) 825-2365.

Editor:
Laura Hart

Designer/Photographer:
David Fischbach

Contributors:
Nancy Abood
Diane Homsany
Christina O'Reilly
Jennifer Sano
Russ Waterman

Office of Public Relations and Publications
Community College of Rhode Island
Knight Campus
400 East Ave.
Warwick, RI 02886

Building Bridges to Lean Manufacturing offers employees college credit for customized training

Now area employees can learn to improve their productivity while gaining college credit in the new Bridges to Lean Manufacturing certificate program offered by the Community College of Rhode Island in collaboration with Rhode Island Manufacturing Extension Services (RIMES). This 15-credit program combines CCRI courses in math, English and business with a 5-credit RIMES lean training program

While the certificate program is open to the general public, it is geared to operations managers, manufacturing managers, supervisors, product cell teams and leaders and quality and ISO leaders already involved in manufacturing. Credits earned can be applied to an associate's degree at CCRI.

Originating on Toyota's manufacturing floor, Lean Manufacturing is based on five core principles called the five Ss—*seiri, seiton, seiso, seiketsu* and *shitsuke*—principles that revitalize work environments and boost efficiency. The 5s, loosely translated, represent a system whereby a work team identifies and sorts the components necessary to manufacture a particular product, removes what is unnecessary from the process, then repeats and evaluates the process.

The effects of creating a visual workplace include the streamlining of inventory control and the reduction of lead times. The lean system also encourages employee input into the manufacturing process and helps build efficient work teams.

Ginny Perelson of RIMES explains, "Lean means doing more with less, seeing waste and trimming waste."

CCRI Dean of Business and Technology Peter Woodberry says that one of the Bridges to Lean Manufacturing certificate program's greatest strengths is its flexibility. "Whether you make wooden cabinets or water depth gauges, you can benefit from these courses," he says.

"The Lean Manufacturing program supports large numbers of manufacturing companies, big and small, that are alive and well in Rhode Island," says Woodberry.

One of the Rhode Island companies poised to benefit from the new certificate program is CAS America, a furniture manufacturer in East Greenwich. For several semesters already, CAS America employees have been enrolled in customized CCRI

courses in computer technology, math, study skills and writing.

A targeted certificate with transferable credits represents the next logical step for these employees, according to CAS America President Joe Cannon. "A lot of

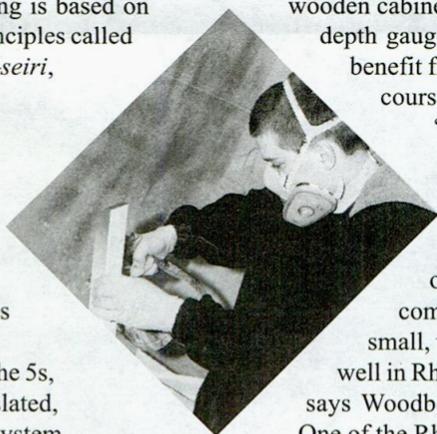


technical skills and a lot of math skills are required today that weren't necessary on a manufacturing floor 40 or 50 years ago," says Cannon.

Intent on demonstrating to his workforce that "the message is career, not job," Cannon has been known to sit in on courses with the students. "In the classroom, my employees are helping each other, working together, and beginning to realize that they have the opportunity to get a college degree and have some control over their future."

For the convenience of participating businesses, Lean Manufacturing classes may be offered at a variety of locations, including CCRI's campuses, Network RI offices, and at the CCRI Training and Technology Center — a new facility opening this month in the heart of the Quonset Point-Davisville Port and Commerce Park.

For information, call Ed Hanrahan at CCRI at (401) 825-2227 or Kim Machado at RIMES at (401) 294-3535.



Commencement Calendar May 2003

Athletic Awards Banquet
Thursday, May 1
6:30 p.m.
West Valley Inn,
West Warwick

Guidance Counselor's Breakfast
Thursday, May 8
8 a.m.
The Marriott, Providence

Knight ADN Pinning Day Program
Friday, May 16
6 p.m.
Valley Country Club,
West Warwick

Flanagan ADN Pinning Day Program
Friday, May 16
7 p.m.
Flanagan Cafeteria

Flanagan ADN Pinning Evening Program
Sunday, May 18
12 noon
Kirkbrae Country Club,
Lincoln

Radiography Program Pinning
Monday, May 19
6 p.m.
Flanagan Cafeteria

Phi Theta Kappa Golden Tassel Ceremony
Tuesday, May 20
7 p.m.
Flanagan Auditorium

Awards Night
Wednesday, May 21
7 p.m.
Flanagan Cafeteria

Rehearsal Day
Thursday, May 22
Line up at 3:30 p.m.
Line of March 4:30 p.m.
Rehearsal 5 p.m.
Flanagan Campus

Liston ADN Pinning
Thursday, May 22
7:30 p.m.
Westin Hotel, Providence

Commencement
Friday, May 23
Robing at 3 p.m.
Line of March at 4:30 p.m.
Ceremony at 5:00 p.m.
Flanagan Campus

Newport ADN Pinning
Saturday, May 24
Time TBA
Officer's Club, Newport

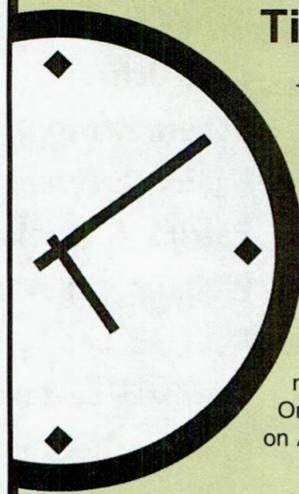
Time to register for summer classes

The course bulletin for the Summer 2003 semester with the listing of available courses is currently on CCRI's Web site at www.ccri.edu.

Just click on AVAILABLE COURSES. Summer course bulletins are currently available at the Office of Enrollment Services on each campus.

Web and TELUS registration for Summer 2003 is currently underway. Be sure to register early for best course selection.

To register via the Web, go to www.ccri.edu and click on CAMPUS PIPELINE. Enter your username and password (the same PIN used for TELUS). If you do not recall your username, click on "find your pipeline username (for students)." Once you have been welcomed into Pipeline, click on School Services and then on Administrative Services and Student Services.

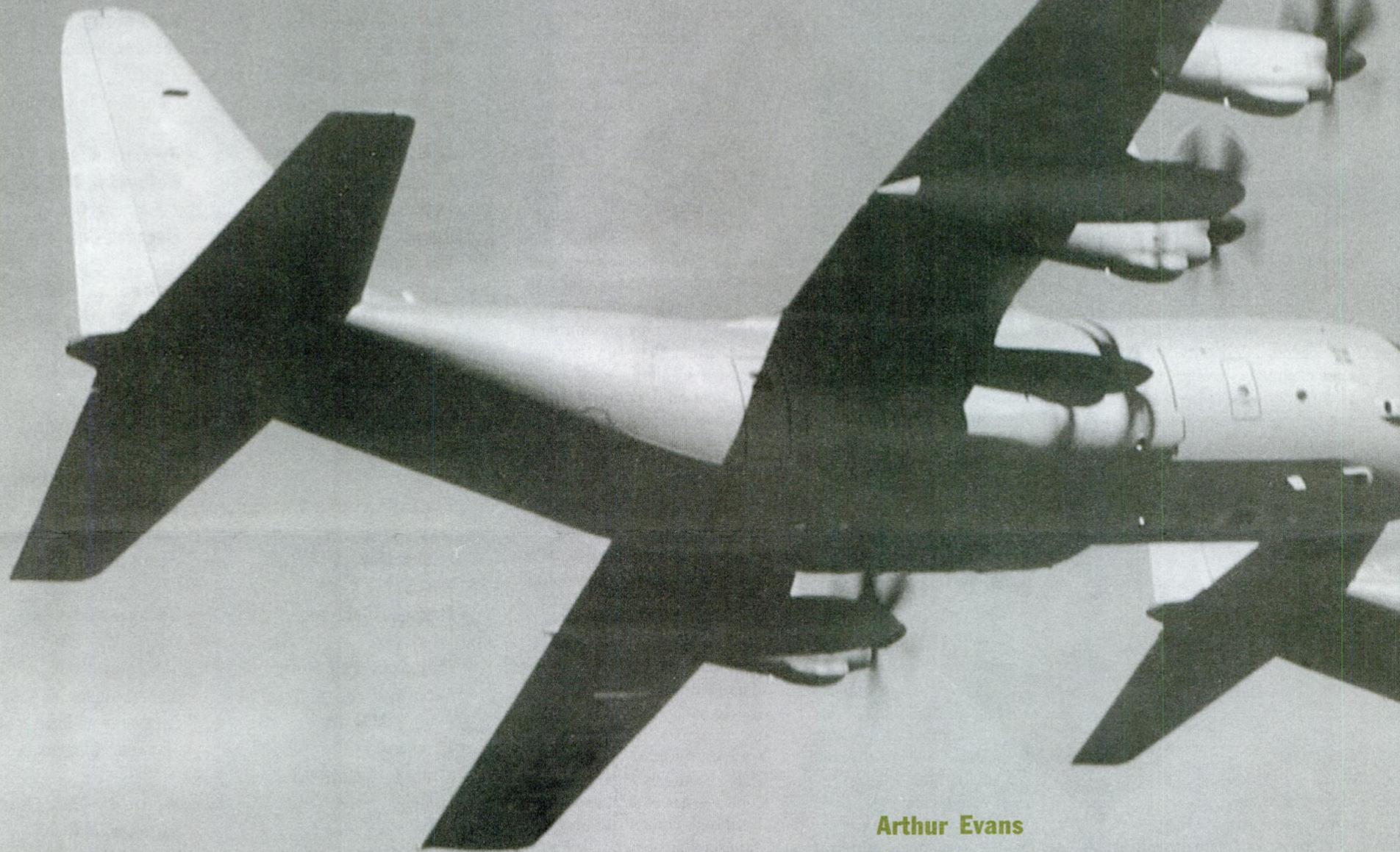


DISCOVER

Get the low-down on occupations with DISCOVER career planning software. For more information, call Career Services at 825-2237.



We salute those students serving our country



Since September 11, 2001, the following CCRI students have withdrawn to honor their military service commitments. The list does not include the many brave CCRI alumni who are currently serving our country.

Edward Aiello
Mardochee Alexandre
Nicole Alexander
Adam Andrukiewicz
Paul Anglin
Emmanuel Arias
Daniel R. Auxier
Michael N. Bading
Regina Baker
Greg J. Barna
Pat Barone
Francis L. Bates
Kelly Bolduc

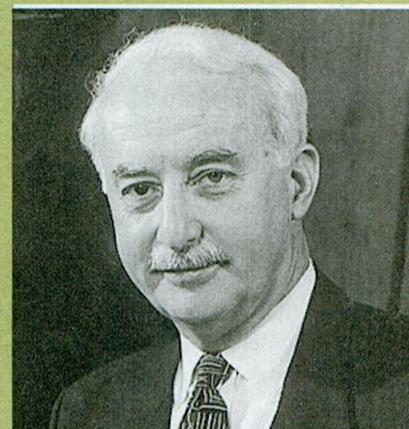
Robert Braga
Javier Bravo
Jeffrey R. Brouillette
Carl Carnevale
Robert Cavallaro
Feifei Chen
Michael Cipriano
Robert Cordoza
Eric M. Cote
Seth Crosby
Alex Daly
Brian Davis
Carel R. Del Santo
Nathan Dubovsky

Arthur Evans
Elias Fernandez
Jonatan Fernandez
Cory Fitzpatrick
Adam Foster
Kevin D. Fournier
Maria F. Freudigmann
Jennifer Fundakowski
William Furman
David Gallo
Alexis Gennettis
Michael B. Gois
Timothy Golembeske
Kennedy Gonzalez
Kyle Gorenski
Garin Greene

Luxmy Gurusamy
Trent Hastings
Scott Humphreys
Sean M. Hunt
Derek Iverson
Chad Johnson
Robert Kenyon, Jr.
Daniel C. Kuhn
Patrick G. Lachance
William R. Lavoie
Douglas Leon
Matthew Levinson
Nicole L'Heureux

A heartfelt thank you from CCRI

The list you see on your left recognizes nearly 100 CCRI students who, since September 11, 2001, have put their dreams of higher education on hold so that they may instead serve the United States of



CCRI President Thomas D. Sepe

America during its current, harrowing conflict. From Rhode Island to all corners of the globe we offer these students, along with the many brave alumni of the community college who are currently deployed, a heartfelt thank you for their commitment and support of our country.

I also urge all members of the CCRI community to support our troops overseas through Lieutenant Governor Fogarty's Operation Support Our Troops - RI, a statewide drive to send 2,000 care packages to RI's troops overseas. Items for care packages run the gamut from flashlights to flyswatters, from cooling strips to wear under chemical suits to non-medicated drops to soothe the soldiers' eyes. As a way to bolster morale, the lieutenant governor is also soliciting pictures of snow for the troops stationed in Kuwait and pictures of the beach for the troops in Afghanistan. On May 10, packages will be assembled and shipped from National Guard Headquarters in Cranston. To find out how to donate items, contact CCRI Student Government or Student Affairs at 333-7159 at the Lincoln campus, 825-2337 at the Warwick campus and 455-6054 at the Providence campus.

Like many educational institutions in the country, the Community College of Rhode Island offers 100 percent reimbursement for those students who have been called to active duty during the semester. Whether they are stationed in America, Kuwait or Iraq, these military personnel and National Guard reservists will always have a home here at CCRI.

A handwritten signature in black ink that reads "Thomas D. Sepe". The signature is written in a cursive, flowing style.

Michelle Peltier

Neftali J. Perez

Kevin M. Perreault

Michelle Pine

Jennifer Pizzaro

Christopher Plante

Matthew Poisson

Alexandria Prescott

Adrienne Reddick

Michael Rodrigues

Gabriel Rodriguez

Arismendy Rosa

Mark Schabek

Richard L. Sifer

David L. Sousa

Keith A. Smith

Nicole Smith

William S. Sneed

William Stapf II

Todd Storey

Howard Sullivan, Jr.

Timothy N. Thompson

Michael R. Turner

Anthony A. Vallarine

Paul Walker

Dan Ward

Kevin Wetherbee

Robert Wheatley

Kevin Lothrop

John Lundquist

Thomas McCarthy

Christopher McGregor

Duncan McSweeney

Morgan Nicholas

Lawrence Ouellette,

Jody Pachomski

David Paley

Roshan Patel

Local companies hunt for new hires at Career Expo

Ready your résumé and straighten your tie for the Career Expo, Wednesday, April 30 from 4:00-6:30 p.m. at the Knight Campus, Warwick. Organized by CCRI Cooperative Education and Career Placement, this networking opportunity brings job-seekers together with two dozen area employers. Students and alumni are encouraged to attend the expo, which is open to the general public.

Career Expo participants not only can meet representatives from health care, hotel and tourism, manufacturing and technology companies, but also can receive résumé advice from CCRI career placement specialists. Those hired by

companies run the gamut from students who are just beginning their degrees to those who are nearly finished.

"It depends on the skills they

have," says Director of Cooperative Education Anne Marge. "Some companies, particularly in the health care field, come to recruit future graduates, while other areas are more concerned with what experience a person has." Marge adds that some employers who take on a current student oftentimes contribute toward tuition.

Health care seems to be the employment area with the most opportunity at the moment, Marge notes. "If students looked at this expo and tried to decide what to go into, they would find excellent job prospects in the health care industries, as well as good pay and job security."

One health care representative who plans to attend this year's expo is repeat attendee Marcia Werber, director of staffing at Care Link, a management group of numerous community care facilities. "The expo is a wonderful opportunity to interact with students to find out what they are looking for,

so we can be more responsive as an employer. The hope is always that we can hire individuals that are a good match for us." Werber explains that while health care employment is foremost on her mind, Care Link, like any other mid- to large-size company, hires workers in fields from administrative to IT.

Electric Boat at Quonset Point and Groton is another company that has frequented the CCRI career expos over the years.

"We're in partnership with CCRI," says EB education representative Fred Pendlebury, adding that the company has offered its employees CCRI training in management and

multi-trade apprenticeship programs. It has also had success recruiting CCRI students, most recently through the college's welding certificate program

housed at Quonset.

Other companies to have signed on for this year's expo include Fleet Boston Financial, St. Anne's Hospital, Walgreen's and Genesis Elder Care.

While the expo is an annual CCRI event, this year marks the first time that it takes place at the close of the work day. Cooperative Education Director Anne Marge explains that the time change should better accommodate the working student, who frequently must juggle classes and a work schedule. "This should give people who work on both ends the chance to attend," she says.

A week before the expo, Career Placement and Cooperative Education will offer two free résumé workshops to help job seekers put their best face forward. Workshops will be held Tuesday, April 22 from 5-6 p.m. at the Warwick campus and Wednesday, April 23 from 4-5 p.m. at the Lincoln campus. For more information about the Career Expo or the Cooperative Education workshops, call 825-2050 or 333-7254.

NASA

from page 1

an all-female team and the smallest team of any there.

The NASA flight program represented something of a homecoming for the students' advisor, Assistant Professor Karen Jager, who had participated in this program as an undergraduate at Pomona College. "It was such a great experience for me," said Jaeger. "I was thrilled to share this possibility with them."

Each of the four young women has an interest in biology, and each is exploring her own unique area: Green is interested in zoology and veterinary science; Savasta is a nursing student taking classes at both CCRI and RIC; Venturini has been accepted to the landscape architecture program at URI as a transfer for fall and will focus on environmental aspects like coastal preservation; Zuromski hopes to further her interest in the earth sciences and biology at a four-year college.

Because of their varied interests, the CCRI project was somewhat unique among the other contenders. A majority of the projects focus on physics, while theirs proposed to examine biological effects on copepods – an organism considered vital at the bottom of the food chain – and crayfish. Venturini explained that crayfish are an excellent source of B12 vitamins and could serve as a staple in the diet of scientists remaining in space for extended periods, such as in experimentation on Mars.

"The crayfish would be a heck of a lot easier to transport and to raise up there than cows or other livestock," said Zuromski. Crayfish normally use gravity to orient themselves, shedding their exoskeleton and following its motion to navigate their way along the dark ocean floor. Copepods orient themselves using light, swimming toward the horizon. The

students theorized that the absence of gravity would make it difficult for both copepods and crayfish to function normally.

Funds for the CCRI team's travel expenses were provided by the Rhode Island Space Grant. Two local business owners quickly stepped up to the plate to aid the student scientists in their preparation for the project. Jeff Whitaker, of Clean Air Solutions in Warwick, guided them with engineering advice on the construction of their holding tank, helping them to meet NASA's standards to resist the pressure of flight and prevent leaks or other structural failures. Craig Barone, of C&H Plastics in Johnston, donated materials for the tank valued at around \$2000.

When the students arrived in Houston, they realized that crayfish, a.k.a. crawdads, are common menu items in the Gulf of Mexico. Savasta says, "They're advertised as lunch and dinner at just about every restaurant we passed by." In fact, Savasta said that when several of their crayfish died before flight time, a local NASA employee ran up the street and came back with replacements for them. The copepods did not fare as well – they all died in transit to Houston and could not be easily replaced.

Three...Two...One.... Zuromski and Green, along with the crayfish, took flight while Venturini and Savasta stayed back as ground crew. Zuromski, seemingly the leastrepid of the group, even got to sit in the cockpit for take-off on one flight. The flyers made some interesting observations about their crustaceans. On the first flight, the crayfish were very confused and disoriented, explained Zuromski. On the second day, however, the crayfish started what appeared to be an attempt to adapt to the lack of a "bottom" to which

they could cling – They began "stacking on top of each other" to compensate and perhaps gain some sense of security.

While in Houston, the women also were able to attend the Lunar and Planetary Science Conference, a global expo where, in coincidental timing, Zuromski had been invited to present her body of research on the subsurface layers of Mars's volcanic sites.

"The experience as a whole was phenomenal," said Zuromski. "We spent ten days touring NASA facilities, talking with scientists and other students from all over the country, having a blast and getting an incredible learning experience in one."

So how does one commemorate such a trip? With tattoos, of course! All four women now have the planet Earth forever inscribed on their ankles, much to the surprise of Jager who arrived in town several days after her students to discover their new artwork. Venturini laughed wryly about her mother's reaction: "You couldn't have just brought back a postcard?"

Upon their return, the four students began work on a final summary report for NASA, and will present their experiences to students throughout the state. They've already lined up engagements at Ponagansett High School, where Savasta, Venturini and Zuromski were all members of the Class of '99, and at Fogarty Memorial Elementary in Glocester, where Savasta and Venturini attended.

"I could definitely be persuaded to do this again," said Zuromski, and the others nodded in agreement. "It was a lot of hard work, but it was worth it. We may be at different schools next year, but I'm confident we'll find a way to collaborate and do this again."

CCRI Foundation awards scholarships

The following scholarship were awarded as follows:

Andrew and Mary Conroy Scholarship for Liberal or Fine Arts:
Mekayla Castro of Providence, **Yurly Chekurov** of Cranston,
Jennifer Demers of Cranston and **Matthew Fecteau** of Pawtucket

Walter & Eileen J. Jachna Scholarship for Paralegal Studies:
Carmen Ann D'Alessandro of West Warwick

F. C. Tanner/Federal Products Employees' Scholarship:

Linda Borden and **Ryan Shoemaker**, both of Warwick

Uber/Testa Award for Psychology: **Michelle D. Carney** of Bristol

Dr. Joseph A. Yacovone Scholarship for Dental Assisting:

Heather Taylor of Manville

Foundation Alumni Day

**May 1st
 Knight Campus**

10:00 Heritage Park groundbreaking

**10:30 Dollars for Scholars
 Basketball Shootout**

11:30 Honorary Alumnus Award

**1:00pm Honors Program Demonstration
 Call for details 333-7150**

Fidelity intern becomes student ambassador

by Molly Hanlon, Fidelity Investments

While CCRI student Steven King has pursued his associate's degree in computer and networking technology, he has also gained important real-world experience as an intern for Fidelity Investments in Smithfield. Since 1999, King has helped to maintain, test and prepare personal computers for Fidelity's computer donation program, through which computers are redistributed to non-profit organizations.

At Fidelity, King is a voice of experience, helping other students to connect real world concepts with their own education. His involvement with

the company has reached back to the CCRI campus, where he serves as Fidelity's honorary student ambassador.

"Being an intern at Fidelity Investments has enabled me to gain a greater understanding of the PC world," says King. "Not only do you learn about a big company such as Fidelity, but you also connect classroom concepts with the job and the outside community."

Fidelity Director of the College Relations Joe Pratt comments, "Ambassadors are ideal candidates for sharing experiences with other students about the Fidelity experience because they are able to offer an accessible and reliable 'voice' to other students."

Paul Anderson, King's manager at Fidelity, adds, "I am most impressed by (Steven's) quickness to take opportunities to learn more about not only the computer industry, but also telecommunications infrastructure and everyday support of our company."

As a literal "early-adopter" of technology, King understands the impact that the personal computer has on the modern-day economy. King was born the year that *Time* magazine announced the computer as the "Man of the Year" — a machine that the magazine's editors predicted would become as commonplace in the American home as the television. King helped to prove this prophecy true when



Steven King (l-r), with President Sepe, Fidelity's Paul Anderson, RI Commissioner of Higher Education Jack Warner, and Dean of Business and Technology Peter Woodberry

at age 11, he received his own personal computer. It did not take long for a young man to become hooked on advancing technology. Combining his interest for computers with his high school curriculum, King chose to attend the William M. Davies, Jr. Career & Technical High School, where he studied computer repair and electronics trades.

A strong proponent of continued education, King advises other CCRI students that now is an opportune time to stay in school, "so that when the market improves, you will be well-skilled and marketable." Adding strong educational experience to a career search will help ensure a positive job match, comments King.

Sports Wrap-Up

BASKETBALL

Both men's and women's basketball teams reached the NJCAA Division Two championship finals. Head coaches, Dave Chevalier for the men and Marcus Reilly for the women, were named as Region Coaches of the Year, while both teams were awarded the region's Team Sportsmanship Awards, the first time that's simultaneously happened.

Oscar Smith of Memphis, TN and MD Mazique of Brooklyn, NY were All-Region First Team while Greg Simoneau and Nick Guadagno, both of Warwick, were Second Team.

Nina Bliss of West Warwick, Carla Hands of Boston and Sara Duszkievicz of South Kingstown were All-Region First-Team women's choices. The Lady Knights beat Mitchell for the first time in 23 years, or 46 games in all.

MEN'S AND WOMEN'S OUTDOOR TRACK

Jennifer McCormack and Orlagh Cullen, two Irish freshmen who played a big role on the national championship women's soccer squad and Ken Deblois of West Warwick and Jonathan Reynolds of Cumberland qualified for the NJCAA Division Three National Championships on May 8 in Delhi, NY. At the qualifier,

McCormack won the 400-meter dash in 1:04.08 and was second in 28.94 at 200 meters, both CCRI records. Cullen was first in the shot-put with a school record 36', 6" inches, second in the hammer at 131', 07" and second in the discus at 118', 03". Deblois was first in the hammer at 150', 04" and Reynolds was second at 131', 07". The squad also is preparing for the Northeast District NJCAA Division Three meet on May 3.

BASEBALL

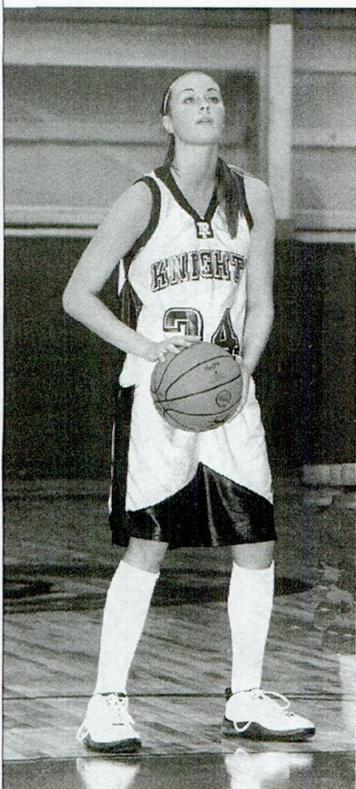
The CCRI baseball team is trying for a three-peat — that is, an attempt to win an unprecedented third straight NJCAA Region XXI Division Two title. The Knights impressively began their season with a 4-2 record in Florida prior to region competition. Leading hitters were Mike Megale of Stamford, CT, Greg Serafin of Providence, Marc Federico of Warren, Matt Newsome of Providence and Nate Flores of Providence. In pitching, Eric Zube of Richmond had a 2-1 record while lefty starter Kevin Maguire of S. Kingstown and Serafin were outstanding. Reliever Juan Martinez hadn't given up a run in his first seven innings, reminiscent of his famous relative, Pedro Martinez of the Boston Red Sox. The Knights begin their region title defense on May 3.

SOFTBALL

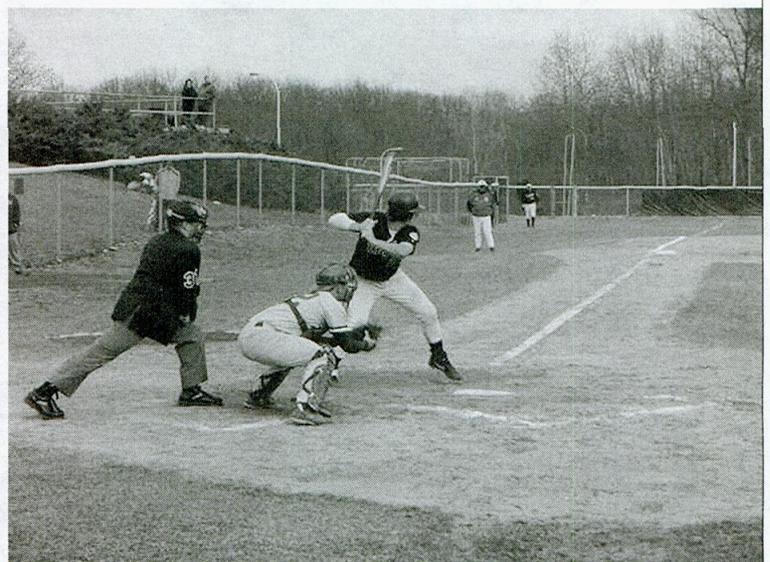
The squad attracted several fans, including administrators, staff and parents to its first doubleheader at the Father Tirocchi Field just a mile from the Warwick campus. Despite two losses, 8-4, and 5-4, in a non-region matchup with the Springfield College JV squad, coach Bev Wiley is optimistic for her team's chances at a run at the NJCAA Region XXI title. Seven players of the 15-member roster are returnees from a Lady Knights 8-7 squad which lost in the Division Two finals last year to Dean College. There's depth in pitching with lots of versatility, indicated Wiley. Pitcher Andrea Teague of Heidelberg, Germany, Kim Cavanaugh of Warwick at third base and Meredith Merchant of Danielson, CT shined early on.

TENNIS

The squad swung into action with an impressive performance against Mitchell College, defending region champions. The Knights overcame the Pequots, 6-3, with Barry Manfredi of Woonsocket at #2 singles handily defeating the defending region champion and national finalist, in two straight sets. Other winners were #4 Elliott Le Faiver of Warwick, #5 Rolando Yotharath and #6 Lisa Archambeault, both of Woonsocket. Sarah Mills of Westerly and Le Faiver won at #2 doubles, while Yotharath and Archambeault combined in #3 doubles. The Knights play in the Region XXI Division Three Tournament on May 3-4 at Mitchell.



Sara Duszkievicz was one of 10 players named to the 2003 Junior College/Community College Kodak All-America Women's Basketball Team. She led CCRI in scoring (12.0 ppg) and was Division Two leader in field-goal percentage from three-point territory, converting a school-record 43 of 83 attempts, the first women's player to lead the nation in any category.



The CCRI Knights baseball team takes aim at UCONN Avery Point last month.

CCRI Summer 2003



Call today to register:
825-2125 (Warwick)
333-7300 (Lincoln)
455-6060 (Providence)
or enroll online at
www.ccri.edu

SUMMER SESSION A

(Warwick, Lincoln, Newport Hospital and Providence)

- May 7-8 Off Campus Walk-In Registration 5-7 pm – Newport ONLY
- May 12 Television classes begin
- May 13 Cancellation of classes with insufficient enrollment
- May 15 Walk-In Registration for students utilizing Senior Citizen, Disabled American Veteran and Unemployment RI Citizen waivers – Warwick, Lincoln and Providence ONLY
- May 19 Session A Classes begin
- May 20 Session A add & late registration period ends
- May 22 Session A drop period ends
- May 26 Holiday – no classes
- June 12 Session A last day to drop without prejudice
- June 30 Session A last week of classes
- July 2 Session A grades due by NOON

SUMMER SESSION B

(Providence and Newport Hospital)

- June 4-5 Off Campus Walk-In Registration 5-7 pm – Newport ONLY
- June 10 Cancellation of classes with insufficient enrollment
- June 12 Walk-In Registration for students utilizing Senior Citizen, Disabled American Veteran and Unemployment RI Citizen waivers – Providence & Newport ONLY
- June 16 Session B classes begin
- June 17 Session B add & late registration period ends
- June 19 Session B drop period ends
- July 4 Holiday – no classes (make-up July 28)
- July 10 Session B last day to drop without prejudice
- July 21-28 Session B last week of classes
- July 30 Session B grades due by NOON

SUMMER SESSION C

(Warwick and Lincoln)

- July 1 Cancellation of classes with insufficient enrollment
- July 2 Walk-In Registration for students utilizing Senior Citizen, Disabled American Veteran and Unemployment RI Citizen waivers – Warwick and Lincoln ONLY
- July 7 Session C classes begin
- July 8 Session C add and late registration period ends
- July 10 Session C drop period ends
- July 31 Session C last day to drop without prejudice
- Aug. 11 Holiday – no classes (make-up Aug. 18)
- Aug. 12-18 Session C last week of classes
- Aug. 20 Session C grades due by NOON

This is a tentative calendar and is subject to revision.



Community College of Rhode Island

Community College of Rhode Island
 One Hilton Street
 Providence, RI 02905-2304

Non-Profit
 Organization
 U.S. POSTAGE
 PAID
 Providence, RI
 Permit No. 1693

Community College of Rhode Island

CCRI students defy gravity at NASA



Kathryn Zuromski poses in her flight suit with a NASA pilot.

What's Inside:

- Introduction to Terrorism course teaches preparedness** p. 1
- Lean Manufacturing comes to Quonset** p. 3
- A salute to CCRI reservists** p. 5
- Sports Update** p. 7

Volume 13 No. 4

April 2003

Visit the CCRI Web site at www.ccri.edu

UHCCLLDIAN

Volume XXXI, Number 4

A STUDENT PUBLICATION OF THE UNIVERSITY OF HOUSTON-CLEAR LAKE

MARCH 17, 2003

Student reduced gravity proposal flies high at NASA

Cheri Scott
UHCLIDIAN STAFF

University of Houston-Clear Lake students will be free-falling this summer. Aileen Ebadat, Megan Ebadat, Sonya Morgan and Carolyn Jessop will be feeling zero gravity July 10–July 19 in the NASA Student Flight Program.

The Reduced Gravity Student Flight Opportunities Program gives undergraduate students the opportunity to successfully create, design, construct, fly and evaluate a reduced gravity experiment of their choice over the course of six months.

“The flight proposals are designed to motivate our scientists and engineers to continue in their specific disciplines,” said Donn Sickorez, university affairs officer for Johnson Space Center. “If it motivates any of our scientists and generates new ideas then [the proposal] has done its job.”

The acronym for the student’s project is FINGER, which stands for finger-flexion investigation in gravitationally exempt realm. The purpose of the experiment is to discover the effects on the human body and to determine the effects of micro gravity on spinal cord excitability. To accomplish this investigation, they will do tendon taps and mild electrical stimulation.

“What our research project is saying is that if spinal cord excitability is compromised, then all the research in the area of exercise is not worth it because the exercises will be harder and

harder for [the astronauts] and not be as effective,” Aileen Ebadat said.

The student team consists of two sets of sisters. Aileen and Megan Ebadat are sisters and Sonya Morgan and Carolyn Jessop are sisters.

Aileen Ebadat is a pre-med student pursuing a bachelor’s degree in biology, Megan Ebadat, a dual credit student, is pursuing an associate’s degree in math and international business at San Jacinto College South.

Morgan is pursuing a bachelor’s degree in biological science, has an associate’s degree in chemistry and is a member of Phi Theta Kappa. Jessop is pursuing a bachelor’s degree in finance and is a member of Phi Theta Kappa.

Aileen Ebadat credits her reflex idea to Rick Puzdrowski, assistant professor of biology, and Ron Mills, professor of biology and chemistry at UH-Clear Lake. They served as advisors throughout the project. Megan Ebadat also credits Catherine O’Brien and Cynthia Hoobler, biology professors at San Jacinto College South, with valuable assistance.

“When I started to do some research on the idea of reflex testing, I realized that not much had been done and [the idea of reflex testing] is still new,” Aileen Ebadat said.

Jessop and Megan Ebadat are responsible for the outreach programs and public relations for the project. Meagan Ebadat maintains the ‘Reflexions’ Web site.

“We are required to have an

outreach program as to how we are going to get the word out about our project. NASA is interested in recruits,” Megan Ebadat said. “We are hoping talk to some high school students that are going into college next year who are interested in doing experiments. We will also be talking to the Girl Scouts to expose them to what we are doing. We want to get them interested in science and math.”

“We will also have an exhibit in the Museum of Health and Science,” Jessop said.

There are several steps required to get a proposal through the acceptance process. First, there is the competition step, which requires a letter of intent to submit a proposal, the proposal itself, and the evaluation of the proposal by NASA scientists and engineers. Second, there is the team selection. Lastly, there is the participation in which the actual flight takes place.

According to NASA, the actual plane that the FINGER team will be using is a KC-135, which is a four-engine turbo jet. The cargo bay test area of the plane is approximately 60 feet long, 10 feet wide, and 7 feet high. The aircraft is equipped with electrical power, an overboard vent system and photographic lights. Air and nitrogen sources are also available. Typical experiments usually last two to three hours and, in that time, the plane does 30 to 40 parabolas.

“The plane actually free falls for 20 to 30 seconds creating zero gravity,” Morgan said.

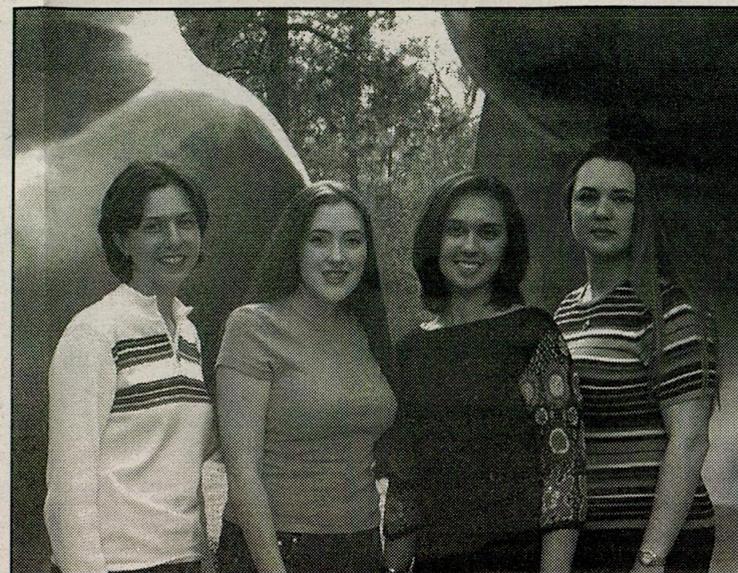


photo by Dusti Moran

Aileen Ebadat, Carolyn Jessop, Megan Ebadat and Sonya Morgan will be testing spinal cord excitability at NASA this summer.

One of the tests the FINGER team will undergo is going into a chamber with decreased air pressure to check their reactions.

As for other students thinking of submitting a proposal, the FINGER team has some encouraging words.

“Think research, do a lot of research to get an original idea and run with it,” Morgan said. “For us it’s more about pride, and as sisters we are doing something together.”

“I think the team should be compatible and celebrate their victory,” Jessop said.

Aileen Ebadat points out that to get this opportunity is a once in a lifetime experience.

“How many people can say I was a person who got to do zero g’s?” Aileen Ebadat said. “How many people really have this experience? I can tell my kids

that I experienced zero gravity. Never underestimate yourself.”

Meagan Ebadat agrees, “It’s hard work but it’s completely worth it. This really is a once in a lifetime experience.”

Sickorez points out some things to consider before submitting a proposal for testing and evaluation.

“Choose something that you are curious about,” Sickorez said. “If you have been wondering how something works, go with that idea. Look up the review of literature on your topic. Reasonable biographies are becoming more and more a necessity. Do the research on your idea at the library, not the Internet.”

“Hopefully we will find ways to enhance the exercises done by the astronauts and make it beneficial while they are in space.”

Paper: Houston Chronicle

>Date: THU 08/14/03

>Section: ThisWeek

>Page: 16

>Edition: 2 STAR

>

>Students experience weightlessness for sake of scientific research project

>

>By GARRETT BRYCE, Houston Chronicle correspondent

>

>

>Four female students from the Clear Lake/Bay Area recently had the opportunity to get light on their feet.

>

>Sonya Morgan, Carolyn Jessop, Aileen Ebadat and Megan Ebadat, students at the University of Houston-Clear Lake and San Jacinto College South, formed the flight team known as Reflexions. With the support of San Jacinto College South, the team experienced something typically reserved for those in space - the sensation of micro-gravity, or weightlessness.

>

>The four broke into two groups and flew aboard NASA's KC-135, aptly named "Vomit Comet," on July 17 and 18. The jet took the group and other students from around the country on a flight with several dives, which canceled out Earth's pull on the body.

>

>Reflexions earned the trip on board the KC-135 in order to perform an experiment on the effects of micro-gravity on the human body, particularly motor skills. The group focused on studying spinal-cord excitability, or how efficient the spine sends signals from the brain throughout the body. Biology experiments such as this are rare on the KC-135, team members said.

>

>"Although much research has been carried out in the realm of micro-gravity, relatively little is known regarding its effects on the human body," the team wrote in their proposal for the project. "This weightless environment is new and unfamiliar to the human body and thus it must adapt to the changes."

>

>They worked for four months on the project and learned they were accepted to fly on the KC-135 in December.

>

>Having their proposal accepted for a flight was only the first hurdle for the team. Training was another.

>

>The group had to undergo time in a hypobaric chamber, where the air was thinned to the equivalent of 25,000 feet above ground. When they removed their masks, they experienced hypoxia, a lack of air to the brain.

>

>It had interesting effects, according to the team.

>

>"Some people get giggly, others get aggressive," Morgan said. "One person could not remember how to spell his own name."

>

>They also had to watch training films and take safety lessons on the flight.

>

- >"It was a lot of work, but well worth it," Aileen Ebadat said.
- >
- >The experience of the actual flight "was incredible," team members said.
- >
- >"Your stomach and your heart come up in your mouth," Morgan said.
- >
- >"You lose control of your body," Aileen Ebadat said.
- >
- >While experiencing micro-gravity, the team performed reflex tests on one another, something Morgan said was difficult.
- >
- >"You want to play; you don't want to focus," she said. "We did get the experiment done, though."
- >
- >The group also learned some less-than-pleasant facts while on the KC-135.
- >
- >"Don't eat chicken nuggets and get on the Vomit Comet ," Morgan said.
- >
- >Although the team is still analyzing data from the trip, there is one thing of which they are certain.
- >
- >"We want to resubmit our proposal for next year," Aileen Ebadat said. "Now that we know what it's like, we can get more accomplished."
- >
- >"Going up once is not enough," Morgan said.



Close

From: Barbier, Karen**To:** Ebadat, Aileen**Cc:****Subject:** RE: story**Sent:** 8/7/2003 7:33 AM**Importance:** Normal

here's the list of pubs that received it:

Alvin Sun
Bay City Tribune
Baycomber
The Bayshore Sun
Baytown Sun
Friendswood Reporter News
Galveston Co. Daily News
Journal Newspapers
Texas City Sun
Houston Chronicle - Education page
Houston Chronicle - This Week, ZONE 6
Deer Park Broadcaster
Clear Lake Citizen
South Belt-Ellington Leader
Brazosport Facts
Pasadena Citizen
Angleton Times
Conroe Courier
Conroe Bulletin
Fort Bend Sun/Southwest Sun
Liberty Vindicator
North Channel Sentinel/Lake Houston Sun
Southwest Star
Wharton Journal-Spectator
Brozoria Co. News
Fort Bend Mirror
Gulf Coast Tribune
Liberty Gazette
Kingwood Observer
Southwest News/Village News
Star Courier

Of course, we have no idea of knowing which ones used it, but I would guess a couple of them picked up the story. We sent out some of the stories with photos. Hope this helps. If we get any more stories in, I'll have Carol Pruitt make copies of them for you.

Talk to you later,
Karen

-----Original Message-----

From: Ebadat, Aileen
Sent: Wednesday, August 06, 2003 11:40 PM
To: Barbier, Karen
Subject: RE: story

Whatever you have is great and whatever you have that can lead me to where I might find the article is great also. HA!
So just lemme know!

Thanks!
Aileen

-----Original Message-----

From: Barbier, Karen
To: Ebadat, Aileen
Sent: 8/6/2003 3:15 PM
Subject: RE: story

The story went to all the pubs on our standard and suburban list. If you need me to send you those lists let me know. We've clipped it from the newspapers we get. However, we usually get our clippings from UH System and they changed clipping organizations in July and a couple of weeks were left out (wouldn't you know it?). We have the clipping from the Clear Lake Citizen, but I don't know how many others picked it up. I can send you what we have, but it's possible it was in several more than the one paper we get. If this is confusing, just give me a call (281-283-2029).

Congratulations again on your trip.

-----Original Message-----

From: Ebadat, Aileen
Sent: Wednesday, August 06, 2003 2:27 PM
To: Barbier, Karen
Subject: story

I never asked where that story you wrote was published. I know you mentioned a few papers, but I don't recall any definites.

Thanks,
Aileen



In This Issue...

- NASA Gravity Experiment
- Chairman's Column
- Faculty Awards & Updates
- Department News
- ICESat to Launch this Fall
- Research & Teaching
- Where Are They Now?
- Blast From the Past
- In Memory of Dr. Clark



Jay Berger with the team's experiment aboard the "Vomit Comet".
(Photo courtesy of NASA)

ASE Students Fly Experiment Aboard the "Vomit Comet"

It all began in the spring of 2000, when ASE undergraduate student Robert Wallsgrove spotted a flyer outside the LRC in WRW advertising the NASA Reduced Gravity Student Flight Opportunities Program (RGSFOP). This program gives students an opportunity to devise and carry out an experiment to be performed in zero gravity aboard the KC-135 "Vomit Comet", an aircraft that flies out over the Gulf of Mexico and executes a series of parabolas, each of which generates weightlessness for approximately twenty seconds. Robert made the decision then to get a team together.

It wasn't until the fall semester when Robert returned back to school that he began thinking about a possible experiment for the RGSFOP, which had been long forgotten over the summer months. It was in Dr. Noel Clemens' fluid mechanics laboratory class where the idea began to come together. Some graduate students were presenting an experiment which involves investigating the effects of buoyancy on non-premixed, turbulent flames, using a drop tower to simulate microgravity. With the help of Dr. Clemens, the team formed its own experiment to take aboard the KC-135 based on the concept taught in his class. Of course, as is the case with most engineering projects, the road to completion would prove to be a long and tedious one, to say the least.



Jamin Greenbaum gives the "Hook 'em Horns" sign aboard NASA's KC-135 aircraft.
(Photo courtesy of NASA)

After several modifications, the team finally put together a second experiment and proposal, which now involved an acoustic force. Word eventually came from NASA that the UT ASE team had been selected as one of 54 teams from across the country to participate in the 2002 RGSFOP. Now the real work began. The team had six weeks to design the entire experiment and submit a Test Equipment Data Package to NASA to determine if the experiment was safe and whether or not it would actually work. Building soon commenced, and the team began to purchase and borrow supplies to build the experiment from ground up. When the project was nearly finished, and two weeks before the team's arrival in Houston, word was sent that there was to be a 300 pound limit per experiment. This was a difficult obstacle to overcome, but it was successfully accomplished.

Once at NASA, the experiment was examined from top to bottom for safety and readiness, and a few things were changed here and there. The flight crew went through training, tweaks were made to the computer program, and finally it was time to fly. Once in the air, the flame was ignited, and the experiment ran perfectly. Little did the team know that this would be the first and last time the experiment would run so smoothly aboard the KC-135. It soon became apparent that the apparatus was leaking methane, and so much that there would not be enough to run any further experiments. Now it seemed all that was left to do was enjoy their time in microgravity,

Faculty Awards & Updates

Chairman's Column

Welcome to the fall 2002 edition of *The Longhorn Liffoff*. I am writing this column a week or so after Endeavour returned to earth in June of this year during which time two "Longhorns" had the opportunity to fly together. Paul Lockhart, an Air Force Lieutenant Colonel and, I am proud to say, a 1969 MS graduate in ASE, served on his first flight as pilot, where he provided intravehicular support for the spacewalks, and Ken Cockrell, a graduate of UT's Mechanical Engineering department and veteran of four flights, served as mission commander. (See page 6 for an article written by Paul Lockhart about the recent STS-111 mission.)

Now, back to earth for some faculty news. In recent months, a few changes to the faculty have taken place. Professors Marc Bedford and Dick Schapery have officially retired, and Professor John Porter has selected phased retirement. Although some well-known professors are leaving, I am pleased to tell you that we have recruited a new assistant professor, Dr. Rui Huang. Dr. Huang's interests are materials and micro- and nano-structures. He joins us in September, following a post-doctoral appointment at Princeton University. As many of you already know, upon going to press with the last edition of the newsletter, I was very sorry to announce that Professor Lyle Clark had passed away on February 12, 2002. Some remarks on the life and contributions of Professor Clark can be found in this issue of *The Liffoff*.

Scholarships were also discussed in the last issue of the newsletter, and Professor Bedford and his wife Nancy have recently donated a significant sum to help create an endowed undergraduate scholarship in their names. Endowments are wonderful things. The corpus is invested and the annual earnings are used to fund the scholarship, thus "they go on giving in perpetuity". Generations of students will benefit from this gift. With some help from our Departmental Visiting Committee we are now very close to completing the scholarship, and just need a few more donations to do so. If you would like to help, please send your contribution directly to me, check payable to the ASE/EM department. Be sure to indicate that it is for the "Bedford Endowed Scholarship".

Final enrollment numbers for fall are not yet available, but preliminary estimates indicate that we will have about 160 FTICs (first time in college), close to the number last year. As for recent graduate statistics, last year 46 students graduated with a BS in aerospace engineering. Keeping track of placement has enabled us to know what our students are doing with their degrees. Over the past five or six years about 75 % of our graduates take jobs, while about 25% go on to graduate school. The job market seems to be holding up well, with all of the students seeking employment last year finding it.

Thank you again for your interest in keeping up with the department. I hope you enjoy this edition of *The Liffoff*. Please feel free to send any comments and suggestions to Kendra Cox at kendra.cox@mail.utexas.edu.

D.S. Dolling, ASE/EM Chair

Ivo M. Babuska, Professor, and Leszek Demkowicz, Professor, were recently elected Fellows of the IACM (International Association for Computational Mechanics) in July 2002, where the awards were announced during the banquet of the World Congress of Computational Mechanics in Vienna.

Robert H. Bishop, Professor, was one of nine faculty members elected to The University's Academy of Distinguished Teachers for the year 2001. Recipients of this award are chosen on the basis of their outstanding teaching, their commitment to students and the learning process, and their ability to motivate and inspire students in the classroom.

David S. Dolling, Chairman, ASE/EM Department, was recently elected a Fellow of the Royal Aeronautical Society in November, 2001.

David Goldstein, Associate Professor, was the recipient of the 2002 ASE/EM Teaching Award which consists of a check for \$1000 and a plaque. The selection committee was comprised of the last three winners of this award (Philip Varghese, Noel Clemens and Clint Dawson) and the Presidents of the AIAA student chapter (Tiffany Wallis) and of Sigma Gamma Tau (Marcus Franki). Nominations were solicited from undergraduate and graduate students, student organizations, and faculty.

Professor Richard A. Schapery Announces Retirement



Professor Richard A. Schapery

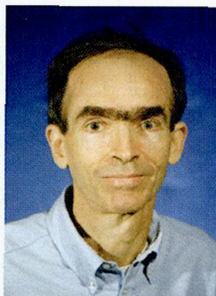
Professor Richard A. Schapery, PE and holder of the Cockrell Family Regents Chair in Engineering No. 7, has announced his retirement effective August 31, 2002. Professor Schapery joined the Faculty of Engineering at UT in August of 1990. He came from Texas A&M where he had served as a faculty member in the Civil and Aerospace Engineering Department since 1969. Prior to that, he was Professor of Aeronautics, Astronautics and Engineering Science at Purdue University.

Professor Schapery is best known for his work in the mechanics of composite materials, viscoelasticity and viscoelastic fracture mechanics. He was a pioneer in the latter two areas, developing theories that had fundamental impact.

His work in these areas found application in solid rocket motors, adhesively bonded joints, asphalt, ice and polymer pipelines, to name a few. In the composites area, he has developed theories of damage accumulation coupled with time dependent behavior. He has published 64 papers in archival journals and authored or co-authored 15 book chapters. He has consulted for more than 40 companies and government laboratories.

Dr. Schapery has been very active in the Society of Engineering Science (SES), culminating in the position of President in 2000. He is a Fellow of SES and a member of several other societies. He was Editor in Chief of the *International Journal of Fracture* from 1995 -2000 and serves on several editorial boards.

Professor John Porter to Begin Phased Retirement



Professor John W. Porter

Professor John Porter begins a phased retirement as of the fall 2002 semester (this permits a faculty member to hold a half-time appointment for up to three years before full retirement). Dr. Porter joined our department as Assistant Professor in 1964, shortly after completing his doctoral degree in Engineering Science at California Institute of Technology. He has taught classes primarily in two areas: fluid mechanics/aerodynamics/propulsion to ASE juniors and seniors, and engineering mechanics service classes to students from across the College of Engineering.

ICESat Scheduled to Launch in December



Illustration of ICESat with Earth backdrop

The NASA Ice, Cloud and land Elevation Satellite (ICESat) is scheduled for launch in December, 2002, on a Boeing Delta-2 rocket from Vandenberg AFB. The sole scientific instrument carried on ICESat is the Geoscience Laser Altimeter System (GLAS), which will make high accuracy measurements of temporal change in the Greenland and Antarctic ice sheets, as well as measurements of global land topography and atmospheric clouds. GLAS has been developed at NASA Goddard Space Flight Center, building on laser technology applied to the successful Mars Orbiting Laser Altimeter. In June, 2002, GLAS completed an extensive test program at Goddard and was shipped to the spacecraft contractor, Ball Aerospace, in Boulder for integration with the ICESat spacecraft bus. Vibration and thermal/vacuum testing of the completed flight unit, referred to as the ICESat Observatory, began in August.

The Center for Space Research (CSR) has primary responsibility to determine accurate orbits for the ICESat Observatory using on-board GPS receivers and ground-based laser ranging systems, to determine accurate laser pointing directions using a specially designed on-board camera system, and to conduct in-flight calibration/validation experiments. CSR has developed several ground-based

techniques to calibrate the GLAS instrument after launch, including an airborne camera system and a ground-based detector array. Several ASE graduate and undergraduate students have contributed to the ICESat mission objectives. An intense period of in-flight calibration and validation will begin about 1-2 months after launch. Professor B. Schutz is Science Team Leader for GLAS and can be reached at schutz@csr.utexas.edu.

Alumnus Donates Authored AIAA Education Books

Alumnus Walter E. Hammond, PE, PhD, who earned his Master's degree in ASE at UT in 1973, recently contributed two authored books to The University's Engineering and Sciences Library. The two books are part of the AIAA Education Series - Space Transportation:

A Systems Approach to Analysis and Design and Design Methodologies for Space Transportation Systems. Bookplates will be inserted in the library copies so that students are aware that Dr. Hammond is an alumni author. Our appreciation goes out to Walter for his kind contribution and support to the College of Engineering and to our department!

GRACE Mission Update

(Article courtesy of Texas Space Grant Consortium)

The GRACE mission was selected as the second mission under the NASA Earth System Science Pathfinder (ESSP) Program in May 1997. This mission will accurately map variations in the Earth's gravitational field over its 5-year lifetime, and consists of two identical satellites flying about 220 kilometers apart in a near-polar orbit, at about 500 kilometers above Earth.

Variations in the Earth's gravity field affect the twin satellites at different times, leading to a change in the inter-satellite range. The Earth's gravity field is thus inferred from accurate measurements of the distance change between the two satellites using a K-Band microwave ranging system, along with non-gravitation force measurements from a precise accelerometer, and absolute position measurements from a GPS receiver. The system will provide scientists with an efficient and cost-effective way to map the Earth's gravity field with unprecedented accuracy. The results from this mission will yield crucial information about the distribution of mass within the Earth.

After the successful launch on March 17, 2002 in Plesetsk, Russia, the twin GRACE satellites have been orbiting the Earth for more than 4 months. The satellites are in the commissioning phase and are expected to transition into the calibration/validation phase in September. With the exception of the inertial measurement unit on GRACE 1, all sensors and instruments are operating in the science data collection mode. A preliminary assessment of the early data indicates that the sensors are meeting the mission objectives. For more information on GRACE visit <http://www.csr.utexas.edu/grace>.

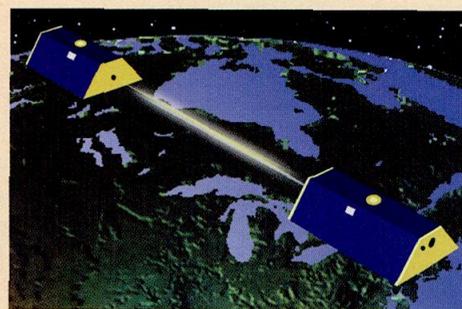
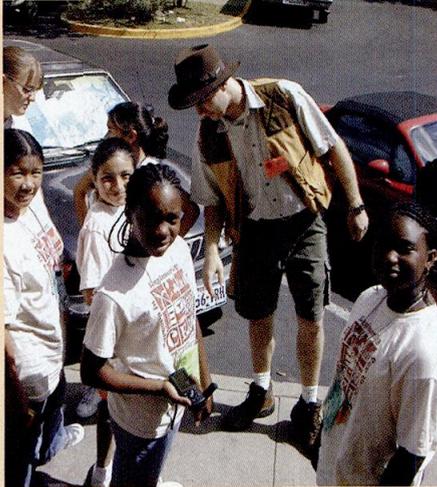


Illustration of GRACE satellites orbiting over the surface of Earth using a K-band microwave link to "connect" the two satellites.

ASE/EM Summer Tours Remain Popular



Graduate student Greg Holt takes CEW students on "Adventures with GPS" where they participate in a scavenger hunt using GPS hand held receivers.

The ASE/EM department continues to gain popularity for its interactive and informative outreach programs as well over 200 prospective students were given the opportunity to visit the department during the sizzling 2002 Texas summer. A wide range of groups visited the department this year, and included students from College of Engineering programs, namely MITE (Minority Introduction to Engineering), CEW (Careers in Engineering for Women), and WE@UT (Women in Engineering at UT). Other visitors included the UT Honors Colloquium, YTL (Young Technology Leaders), a group of top high school students from across the nation, as well as various smaller local groups, which included space camps and private schools. "Splash into Engineering", a program developed by the College of Engineering aimed at meeting its many tour requests, was also a success its first year running. A mini version of "Explore UT", this program was available to grades 5 through 12 on a sign-up only basis.

Aerospace activities included many favorites such as the flight simulators, "Adventures with GPS" and tours of both the low speed and supersonic wind tunnels. Newly added was a presentation by recent undergraduate students who flew their microgravity combustion experiment aboard NASA's KC-135 aircraft. Overall, students and visitors seemed pleased with their experience at the ASE/EM department. When asked for comments about her visit to the department, one middle school girl's response was, "I love this part of camp. Aerospace Engineering is definitely a career I would pursue. This week was fun but today's schedule (ASE/EM visit) was the best! I would love to fly and build my own plane someday".

For more details about "Splash into Engineering" contact Tricia Berry at 512-471-5650 or tsberry@mail.utexas.edu. Contact Kendra Cox at 512-471-4235 or kendra.cox@mail.utexas.edu for more information about ASE/EM outreach.

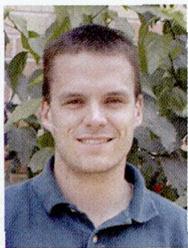
Vomit Comet (continued)

which is exactly what they did. Flipping, standing on the ceiling, snapping photos, and talking to ground control is how the team finished its flight.

So what did these students get out of all this? How did they feel when it was all over? They still enjoy talking about it and showing off their experiment and video with the public, and do so through outreach programs in the ASE/EM department. In the end, Robert says, "We were happy that the whole thing had been a success, but share a common feeling of sadness that we had to go back to our normal lives stuck on the ground".

For more information about the teams' project and experience, visit <http://www.ae.utexas.edu/design/kc135/index.htm>. For more information about RGSFOP, visit <http://microgravityuniversity.jsc.nasa.gov/>.

ASE Graduate Student Earns University Research Award



Jared Madsen, ASE Graduate Student

Kudos to ASE graduate student Jared Madsen, advised by Dr. Glenn Lightsey, who was recently selected as one out of only 8 students university-wide to receive the George H. Mitchell/University Co-op Graduate Award for Research.

Jared's research has focused on the development of a Global Positioning System (GPS) based attitude determination system. GPS attitude systems currently in use on spacecraft use highly accurate carrier wave measurements between three or more antennas. These measurements allow the attitude of a spacecraft to be determined to an accuracy of less than one degree. One problem with these systems is that they require an initialization procedure called integer ambiguity resolution. This procedure can be difficult, time consuming, and prone to failure.

Jared has developed an attitude determination system that utilizes multiple canted antennas to measure signal strengths from the GPS satellites to determine attitude. This system requires no initialization procedure. It has demonstrated accuracies to within 8 degrees of truth. He is currently working to combine both of these methods into a single system. This new system will use the less accurate method to initialize the accurate method more quickly and reliably, and should be more robust and reliable than the systems currently in use. The design could be used on terrestrial applications, such as airplanes and ships, as well as on spacecraft.

War Years Reunion

Classes 1940 - 1949
Saturday
October 19, 2002

Join us and your old classmates for a fun filled day of activities on the UT campus! The day will include a College of Engineering update from Dean Streetman, a bus tour of campus, meeting with current students, and watching UT take on Kansas on a big screen TV. Contact Lisa Schooley at 512-471-8850 or lschooley@mail.utexas.edu for more information.

ICESat Scheduled to Launch in December



Illustration of ICESat with Earth backdrop

The NASA Ice, Cloud and land Elevation Satellite (ICESat) is scheduled for launch in December, 2002, on a Boeing Delta-2 rocket from Vandenberg AFB. The sole scientific instrument carried on ICESat is the Geoscience Laser Altimeter System (GLAS), which will make high accuracy measurements of temporal change in the Greenland and Antarctic ice sheets, as well as measurements of global land topography and atmospheric clouds. GLAS has been developed at NASA Goddard Space Flight Center, building on laser technology applied to the successful Mars Orbiting Laser Altimeter. In June, 2002, GLAS completed an extensive test program at Goddard and was shipped to the spacecraft contractor, Ball Aerospace, in Boulder for integration with the ICESat spacecraft bus. Vibration and thermal/vacuum testing of the completed flight unit, referred to as the ICESat Observatory, began in August.

The Center for Space Research (CSR) has primary responsibility to determine accurate orbits for the ICESat Observatory using on-board GPS receivers and ground-based laser ranging systems, to determine accurate laser pointing directions using a specially designed on-board camera system, and to conduct in-flight calibration/validation experiments. CSR has developed several ground-based

techniques to calibrate the GLAS instrument after launch, including an airborne camera system and a ground-based detector array. Several ASE graduate and undergraduate students have contributed to the ICESat mission objectives. An intense period of in-flight calibration and validation will begin about 1-2 months after launch. Professor B. Schutz is Science Team Leader for GLAS and can be reached at schutz@csr.utexas.edu.

Alumnus Donates Authored AIAA Education Books

Alumnus Walter E. Hammond, PE, PhD, who earned his Master's degree in ASE at UT in 1973, recently contributed two authored books to The University's Engineering and Sciences Library. The two books are part of the AIAA Education Series - Space Transportation:

A Systems Approach to Analysis and Design and Design Methodologies for Space Transportation Systems. Bookplates will be inserted in the library copies so that students are aware that Dr. Hammond is an alumni author. Our appreciation goes out to Walter for his kind contribution and support to the College of Engineering and to our department!

GRACE Mission Update

(Article courtesy of Texas Space Grant Consortium)

The GRACE mission was selected as the second mission under the NASA Earth System Science Pathfinder (ESSP) Program in May 1997. This mission will accurately map variations in the Earth's gravitational field over its 5-year lifetime, and consists of two identical satellites flying about 220 kilometers apart in a near-polar orbit, at about 500 kilometers above Earth.

Variations in the Earth's gravity field affect the twin satellites at different times, leading to a change in the inter-satellite range. The Earth's gravity field is thus inferred from accurate measurements of the distance change between the two satellites using a K-Band microwave ranging system, along with non-gravitation force measurements from a precise accelerometer, and absolute position measurements from a GPS receiver. The system will provide scientists with an efficient and cost-effective way to map the Earth's gravity field with unprecedented accuracy. The results from this mission will yield crucial information about the distribution of mass within the Earth.

After the successful launch on March 17, 2002 in Plesetsk, Russia, the twin GRACE satellites have been orbiting the Earth for more than 4 months. The satellites are in the commissioning phase and are expected to transition into the calibration/validation phase in September. With the exception of the inertial measurement unit on GRACE 1, all sensors and instruments are operating in the science data collection mode. A preliminary assessment of the early data indicates that the sensors are meeting the mission objectives. For more information on GRACE visit <http://www.csr.utexas.edu/grace>.

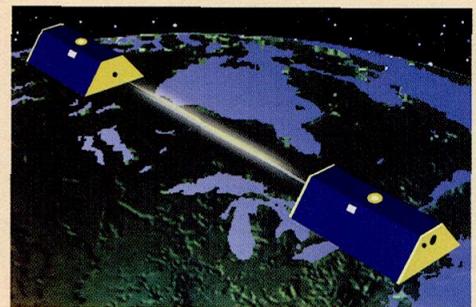


Illustration of GRACE satellites orbiting over the surface of Earth using a K-band microwave link to "connect" the two satellites.

Verona grad has thrill of a lifetime in zero gravity

by Karl Curtis
Verona Press Editor

There probably aren't many people here on Earth who can tell you what zero gravity feels like. Nicolas Schellpfeffer, however, is one of them.

Since he graduated from Verona Area High School in 1999, Schellpfeffer has been pursuing an aerospace degree at the University of Minnesota, and recently became a team lead for the University of Minnesota Department of Aerospace Engineering and Mechanics Micro-Gravity Teams.

While he may have had his career path in mind when he left Hometown USA for the Land of 10,000 Lakes, it is doubtful he envisioned the adventure he would experience this past March.

During March 12-22, Schellpfeffer led 11 senior aerospace engineering students from the university who were selected by NASA to perform zero-gravity experiments as part of the agency's Reduced Gravity Student Flight Opportunities Program. The program takes place at Ellington Field in Houston, Texas.

As part of this experience Schellpfeffer was able to fly in NASA's KC-135 aircraft, a zero gravity simulating plane nicknamed the "Weightless Wonder."

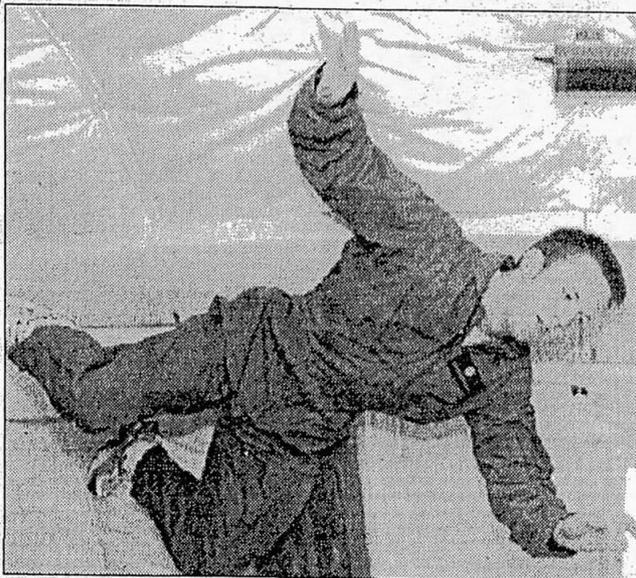
"The program was one of my best experiences of my life," Schellpfeffer said when he contacted the *Verona Press* last week to tell us about the experience. What follows is an e-mail interview we did with Schellpfeffer, who is now safely back on the ground in Minnesota.

Verona Press - *When did you first become interested in science, and was there something in your VASD education that led you in that direction?*

Nicolas Schellpfeffer - All my life I have always leaned towards the science/engineering direction. It probably had something to do with the fact that my dad is an engineer, but I have always loved building and designing things since I was little. The first time I realized I wanted to go into aerospace engineering was during a family vacation when I was only about 6 years old. That summer we went to Florida mostly to go to Disney World, but we took a day off and visited Kennedy Space Center, and I remember just being amazed by everything. At the time I don't think I knew that I was going to pursue aerospace engineering because I didn't know what it was or probably even how to spell it, but it did spark an interest in me, which is still today very strong.

VP - *What types of science classes did you have in high school and did they help you build a solid foundation for your college studies?*

NS - My senior year I took two AP classes at Verona.



Nicolas Schellpfeffer floats in zero gravity.

submitted photos

month-and-a-half we waited for a decision from NASA, which finally came during early December. After about a half a year of work we were selected, and it was finally official, I was going to take a ride in the KC-135. So from there we had three months to build our experiment and get it ready for our flight date, which was chosen for March 20th.

VP - *Were you nervous about going up in the plane? How did your friends react? What do your parents think?*

NS - I was never nervous about the plane ride until I got down to Houston. One of the first meetings was about the specifics of the flight where they discussed and showed the flight trajectory. They said something like, "Every flight we push this plane to its limit with some of the best pilots, taking it up to its stall angle and down to its steepest pull out angle." That made me a little nervous watching the plane go what looked like almost straight up then straight down.

All my friends were great. Everyone was really supportive and understanding of my busy schedule. The parents were thrilled, but they made it a point several times to remind me to call them as soon as I was back on the ground. I'm very lucky; I would have never had this great opportunity if it weren't for their help.

VP - *Describe, as best you can, the feeling of zero gravity. Take us step-by-step through the ride.*

NS - There is nothing else in my life that I can

ple seconds to get your feet below you before falling out of the air as the airplane goes back into 2g's.

VP - *What did you feel like after the ride? I've heard it also has the nickname "the vomit comet." Did you have to do any special preparation to take the ride?*

NS - I felt like a little kid who was told it was time to leave the playground; I wanted to get the plane back in the air and do another 50 parabolas. Physically after the flight I felt great, I never really felt sick, except for when I walked during 2g's to a window to watch the horizon rotate about the plane like the second-hand on your watch.

As far as preparation, there was a physiological training the week before, and we were given motion sickness pills before the flight. I remember one person asking how our medicine compared to Dramamine, and the flight medic said if Dramamine was a cap gun this was more like an assault rifle.

VP - *When do you graduate, and what would you like to be doing for work when you finish school? Do you have any job prospects? How about summer employment?*

NS - Currently, I am in my fourth year in the Aerospace Department and scheduled to graduate this May with a Bachelor of Aerospace Engineering and Mechanics. I am pursuing a Masters and maybe Doctorate Degree with an emphasis on Aircraft Aerodynamics and Design with a future goal of working with Lockheed Martin or Boeing in the 'Skunk Works' or 'Phantom Works' programs.

Next year I am going to The Georgia Institute of Technology, where I will be part of their Aerospace Systems Design Laboratory, working on a revolutionary design concepts project with Lockheed Martin. Outside of the University, I am currently employed at Honeywell, where I am a student aide in their Aerospace Systems and Guidance, Navigation and Control section. Currently at Honeywell I am working on a joint project between Honeywell and DARPA in the design and testing of a new vertical takeoff and land (VTOL) unmanned aerial vehicle (UAV). Specifically, I have done work with parameterized modeling, disturbance analysis, and I am also involved with the flight-testing and analysis.

VP - *Anything else the people in Verona should know about you or your adventure?*

NS - Flight specifics: The zero-gravity environment is simulated by flying huge parabolas between 40,000 and 30,000 ft, at the crest of each parabola there is 25-30 seconds of weightlessness and at the base there is about 40 seconds of 2g's. For our flight this procedure was repeated 42 times. (That is why some people get sick - UP AND DOWN, UP AND DOWN...)

If you are interested in learning more about the things dis-

VP - I typed science classes at you in high school and did they help you build a solid foundation for your college studies.

NS - My senior year I took two AP classes at Verona, which helped set a solid foundation for me going into my first years of college. The classes were AP Physics, which was taught by Ms. Howell, and AP Calculus, which was taught by Mr. Guy. I thank them for making the transition to college level courses a little easier, and setting me off on the right foot with a little knowledge too.

VP - What was the process for being chosen to participate in the NASA program?

NS - The first step was to be selected by our aerospace department to represent the university and the department. This occurred about one year ago this month, which consisted of an application and a short essay. In early May 2002, I found out I was selected by the university to lead one of two University of Minnesota teams. There were 12 team members chosen, and they were divided into two research teams, which had emphasis on either solid mechanics or fluid dynamics.

I was leading the fluid dynamics team, so our next step was determining what our experiment was going to be. By early September we had come to an agreement to study the affects of liquid coalescence, and prepared a letter of intent for NASA stating our research topic. The next step was the hardest. Now, we went into the research and design stages of the project where we prepared an experimental proposal for the NASA - Reduced Gravity Student Flight Opportunities Program selection board.

We submitted our proposal, titled "The Study of Droplet Coalescence Criteria of a Liquid/Liquid Interface in Micro- and Macro-Gravity Conditions" in mid-October. The next

were their

VP- Describe, as best you can, the feeling of zero gravity. Take us step-by-step through the ride.

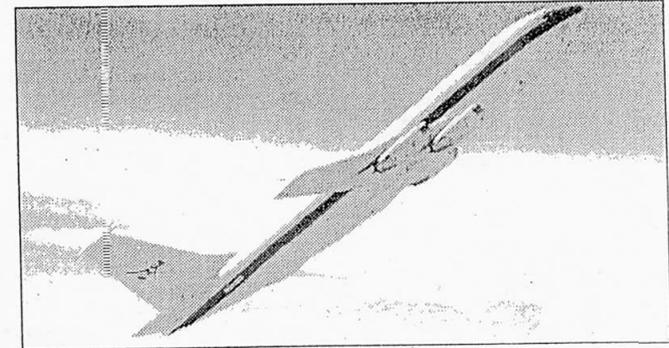
NS- There is nothing else in my life that I can even compare the feeling to. It was a remarkable combination of being completely in peace with your body, but at the same time every motion of your body is amplified. For example, during the first parabola you first get exposed to 2g's while the airplane is building energy, so you are getting slammed into the ground. All of a sudden you feel the extra g's disappear and for half a second its normal, but then you start feeling your body getting lighter, and what you think is the floor falling away from you. But really all that is happening is it stops pushing against you. So, my first time I'm pretty sure I was wide-eyed and saying 'oh my god' when I first started floating.

At this point I was completely excited, and it is your instinct to want to stabilize yourself with the ground. So I went to put me feet down as if in normal gravity, in doing so worsened the situation and sent myself in a violent pinball motion across the top, sides, and bottom of the aircraft. This was a quick and easy lesson that every movement made has an affect and if you want to float across the cabin you do not have to push hard at all. Then after the 25-30 seconds of floating, you hear the flight director say "feet down" giving you a cou-

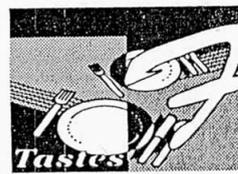
our that this procedure was repeated 42 times. (That is why some people get sick - U.S. AND LONDON, U.K. AND DC ...)

If you are interested in learning more about the things discussed in this interview, visit some of these sites:

NASA - Reduced Gravity Student Flight Opportunities Program: website: <http://microgravityuniversity.jsc.nasa.gov/>
The University of Minnesota Micro Gravity Fluids Team website: <http://www.aem.umn.edu/proj-prog/sfo/fluids-2003/>
The University of Minnesota - Dept of Aerospace Engineering <http://www.aem.umn.edu/>



The "Weightless Wonder" in mid-parabola.



BROKEN SPUR SALOON
102 RAILROAD ST
VERONA / 845-9917

KARAOKE CONTEST!
KARAOKE BOBS VACATION GIVEAWAY!
GRAND PRIZE 7 WONDERFUL DAYS IN JAMAICA!!!
INCLUDES AIRFARE FOR 2!
FRI APR 11 - WED APR 23
SEMI-FINALS APR 25
FINALS MAY 2

STAR CINEMA
April 11 - 17, 2003

ANGER MANAGEMENT ✓ (PG13)	IBX Screen #1: 12:00 - 2:15 - 4:30 - 6:45 - 9:00
IBX Screen #2: 12:45 - 3:00 - 5:15 - 7:30 - 9:45	
IBX Screen #3: 1:30 - 3:45 - 6:00 - 8:15	
PHONE BOOTH ✓ (R)	IBX 12:15 - 2:10 - 4:00 - 6:00 - 7:45 - 9:45
WHAT A GIRL WANTS ✓ (PG)	12:00 - 2:20 - 4:40 - 7:00 - 9:20
BRINGING DOWN THE HOUSE (PG13)	Screen #1: 12:30 - 2:45 - 5:00 - 7:15 - 9:30
Screen #2: 6:30 & 8:45	
A MAN APART ✓ (R)	12:30 - 2:45 - 5:00 - 7:20 - 9:45
HEAD OF STATE (PG13)	12:15 - 2:30 - 5:00 - 7:30 - 9:45
PIGLET'S BIG MOVIE (G)	12:00 - 1:45 - 3:30 - 5:15 - 7:00
THE CORE (PG13)	12:30 - 3:30 - 6:30 - 9:30
AGENT CODY BANKS (PG)	12:00 - 2:10 - 4:20
BASIC (R)	12:30 - 2:45 - 5:00 - 7:15 - 9:30
OLD SCHOOL (R)	12:45 - 2:45 - 4:45 - 6:45 - 8:45
THE HUNTED (R)	12:15 - 2:30 - 4:45 - 7:00 - 9:15
DREAMCATCHER (R)	9:00 ONLY
BULLETPROOF MONK ✓ (PG13)	Starts Wed., Apr. 16 - Call for Showtimes!

Celebrate the Resurrection of Jesus
Palm Sunday

Sun, April 13: 8 & 10:45 AM Worship - Re-enactment of a Jewish Seder Meal. Celebrate Jesus' entry into Jerusalem with palms and songs.

Sun, April 13: 5-7 PM - "Why Believe in the Resurrection" - A live simulcast that features Lee Strobel. Concrete proof will be offered to support the resurrection.

Thurs, April 17: 7 PM - Re-enactment of the last Passover Meal.

Fri, April 18: 7 PM Worship - A live portrayal of the Stations of the Cross.

Sat, April 19: 10 AM - Easter Egg Hunt-Reservations required. 3,000 eggs stuffed with candy can be picked up by the first 300 children.

HE IS RISEN! Your salvation is complete in Jesus Christ! Rejoice with us as we sing praises to the risen King.

Christ Memorial Lutheran Church
2833 Raritan Road, Fitchburg, WI 53711 • (608) 271-2811
Email: cmc@chorus.net • www.Christ-Memorial.com

P
S
U

V 2
a 0
n 0
s 3
u
a
r
d

NASA projects continue at PSU

Capstone to send students on NASA aircraft

Christian Gaston
February 05, 2003

Four projects in Portland State University's mechanical engineering department relying on NASA funding or facilities are going forth, waiting for final word on the financial impact of the Columbia disaster.

While worries about the future of NASA have been aired since Saturday, NASA has urged researchers to continue their projects as planned.

One such project at PSU, a senior capstone investigating fluid dynamics in reduced gravity, is to be flown this March aboard NASA's KC135 aircraft, which simulates the low-gravity conditions of space.

PSU seniors, Mike Severson, Albert Sitoris, Jamie Kelso, Mike Bacich, and Megan Sala are building an apparatus that will do the testing with some controls being operated by the students on board the plane.

"There are interesting fluid behaviors when gravity is not dominating the system, we wanted to research this phenomenon so we submitted the proposal and we were accepted by NASA," Severson said, explaining the scope of the project.

"It all started with Professor Mark Weislogel introducing it last year at the end of our heat transfer class," said Severson.

Weislogel, a former NASA researcher, now an associate professor of mechanical engineering at PSU described the other NASA-funded programs he's currently involved in.

"One is a fundamental study of fluid mechanics in space, dealing with liquid water, oxygen and propellants," Weislogel said.

"On the fundamental research side, we have the hair-brained concept and we show in an equation or on the research side that we can make it work," he

said.

"Two others, developing a cooling system for use in satellites and spacecraft, it's a novel new high power high performance system," Weislogel said, "One is looking at miniaturizing the system, the other one is a big one."

Liquids are can be difficult substances to deal with during space flight.

"The liquid inventory is 60 percent of the weight of the spacecraft, and because some of these liquids are cryogenes, you want to keep the liquid in a safe place," Weislogel said.

Any heat can cause a Cryogen to boil and expand as a gas, causing the tank the liquid is held in to expand or explode. In order to prevent that, the gas must be vented, but as gravity is removed, gas no longer rises to the top of a container, and so locating the gas becomes a chore.

Weislogel said the main difficulty in developing technologies for spacecraft and satellites is gaining access to low gravity situations.

"There's so little exposure to microgravity that failsafe designs are difficult to come upon," he said.

NASA uses the KC135 aircraft and drop towers to simulate microgravity on Earth.

According to Weislogel, drop towers are often the best place to test space-bound designs.

"The problem is you can only get about five seconds (of test time)," he said.

New drop towers in Japan and Canada afford 10 and 15 seconds respectively, but still don't offer the prolonged access to microgravity that a shuttle mission or the International Space Station affords.

Innovative design wins group trip to Houston

CASEY COX

caseyc@vg.pdx.edu

Around this time last year, five undergraduate students at Portland State had not even fathomed the possibility of traveling to NASA headquarters to test theories of space flight. Now, those same students are gearing up for a trip to Houston's Johnson Space Center in mid-March for a two-week mission to test their innovative design for fluid dynamics during space flight.

The students, Megan Saala, Michael Bacich, Albert Sitorus, Mike Severson and Jamie Kelso, have been working diligently since June 2002 to design a fluid transfer system that can operate effectively in zero-gravity situations. NASA has had difficulties in the past with the cycling of liquids under gravity-less conditions, and the Portland State crew is hoping to remedy that.

All five are undergraduates in the mechanical engineering program, and range in ages from 23 to 30. They all bring unique backgrounds and experiences to the group.

Saala came to Portland from a small town in Maine to see a new place and ultimately enrolled in classes at Portland State, as did Bacich, who came to Oregon from St. Louis because of the wide range of

outdoor activities.

Severson and Kelso are both natives of Oregon. Severson attended Hillsboro High School, and Kelso got his diploma from Newberg High School.

"Not too many people know that. It's not exactly something I brag about," Kelso said jokingly.

The one thing they all have in common is their dedication to the project. Their determination earned them a spot among the 71 accepted entries from a pool of more than 400 proposals submitted to NASA from schools around the United States.

"What we're hoping for is to land a research grant so Dr. Weislogel can work with other students in the future on similar projects," Bacich said.

Mark Weislogel is an associate professor of mechanical engineering who worked for NASA for many years before coming to Portland State. He is the overseeing professor on the project. The group members give him credit for giving them the original idea and for encouraging them to pursue it.

All the group members have undergone extensive training in preparation for their inaugural flight in the KC-135 aircraft, operated by NASA. They have performed all the necessary safety training on their fluid transfer apparatus and have passed the same Federal Aviation Administration physical tests that pilots are required to undergo.

"We're all pretty excited," said Severson in anticipation of riding in

an aircraft that will be going from 24,000 feet to 34,000 feet and back down to 24,000 feet, all within 64 seconds. "I have over 600 recorded sky-diving jumps, so I'm pretty used to being up in the sky."

Sitorus compared the flight to a theme park.

"This type of stuff at NASA is the Disneyland for engineers," he said.

None of the students has strong experience with space-related projects or hobbies, which makes this endeavor both an exciting and somewhat mysterious one. Their range of expertise is mainly in mechanical engineering.

Sitorus, Saala and Bacich add their emphasis on fluid dynamics to the project, and Severson and Kelso are focusing on the structural and mechanical design.

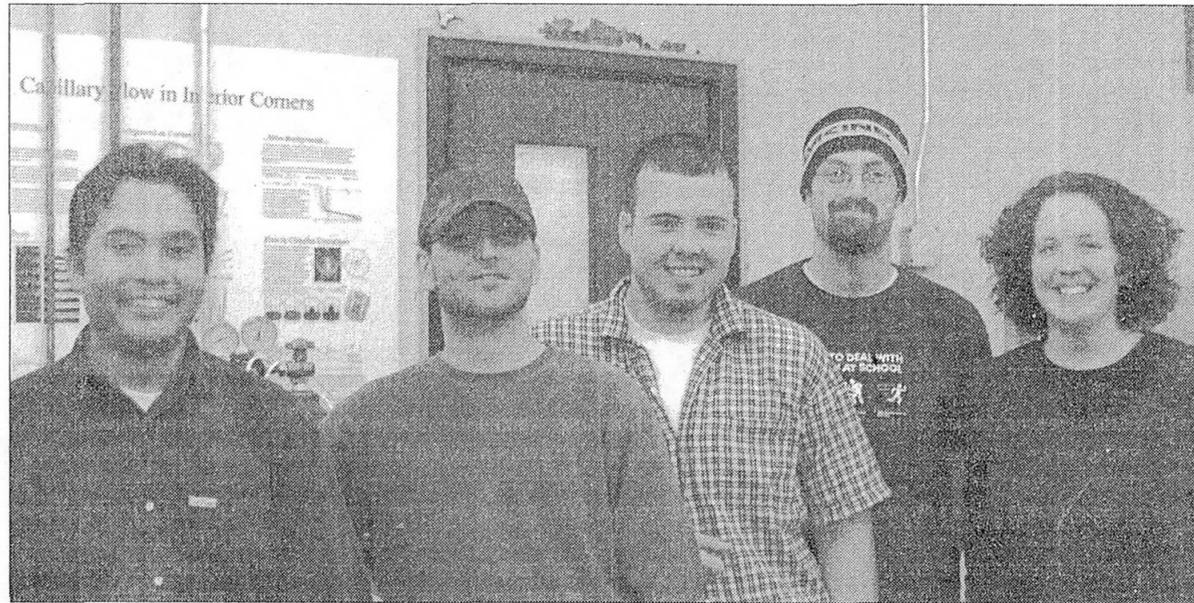
The system they have designed is the first ever to use a circular system of tubing for fluids to flow through. Most designs have typically used straight-lined tubing, which has resulted in poor circulation in some cases.

These tubes are used to transfer everything from hydraulic fluid to drinking water.

They will be discovering how gravity affects the transfer of fluids and liquid gases within their design, and are maintaining a high level of confidence that it will impress the folks down in Houston.

For more information on the NASA plane, visit <http://jsc-aircraft-ops.jsc.nasa.gov/kc135/>.

Students prepare for test flight with NASA



Eleena Fikhman ■ Vanguard

(Left to right) Sitorus, Bacich, Severson, Kelso and Smith are preparing to fly on NASA's KC-135 aircraft this March.

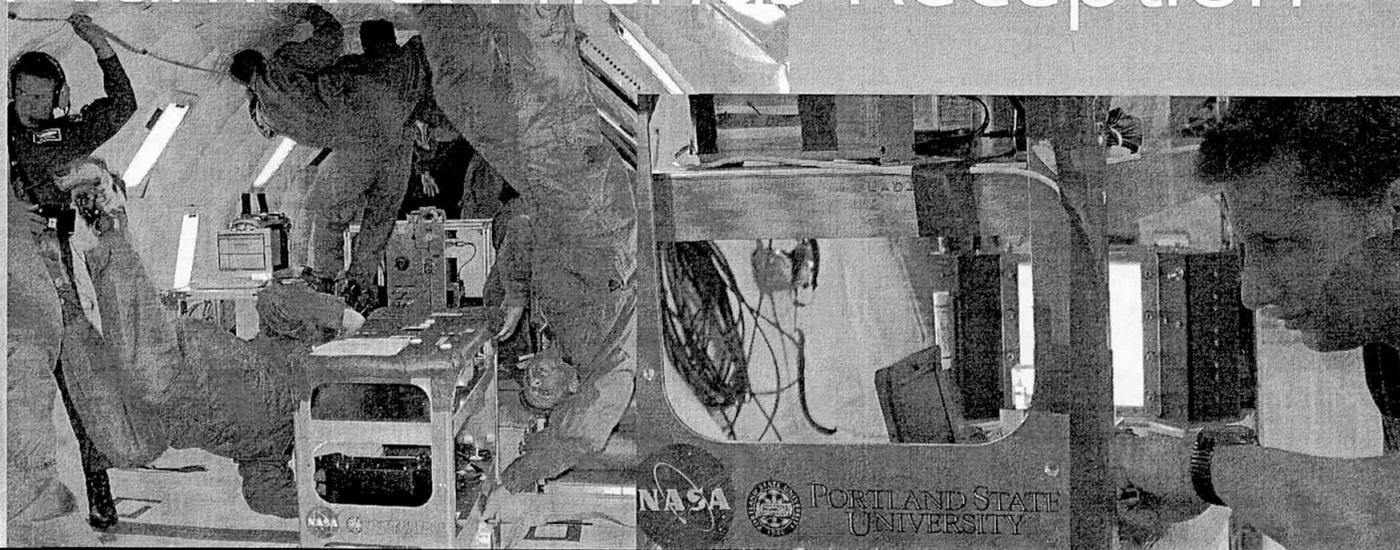
The Portland State student paper has covered our progress since our initial acceptance into the RGSFOP. A series of follow up articles will be printed this fall and will include more information about other interested student groups.

We were invited to present our project and experiences in the Reduced Gravity Program at this years Department of Mechanical Engineering's Eleventh Annual Alumni & Friends Reception. Three members from our team met with a large group of PSU alumni working in various industries around the country. Here we had the chance to present a documentary video we had created of our entire trip to Houston. It also gave us the opportunity to discuss the science and engineering of our project with an experienced group.

PORTLAND STATE
UNIVERSITY

Department of Mechanical Engineering

Eleventh Annual Alumni & Friends Reception



On the cover

Several exciting NASA projects provided significant design challenges and relevant work experience for PSU mechanical engineering students. Most recently, a team of five seniors proposed and was awarded a flight aboard the NASA KC-135 low-gravity aircraft that became their Senior Capstone project. The novel experiment they designed and fabricated from scratch focused on a fundamental flow phenomena that cannot be studied on earth. Such flows are critical to the performance of certain subsystems in advanced spacecraft, such as life support systems, thermal control systems, and “on-orbit” fuels handling operations. The project took the team to Houston for a 10-day visit that included NASA/FAA decompression chamber certification and two flights aboard the low-g aircraft, which is capable of generating up to 50 consecutive 25s periods of near-weightlessness in which the students conducted their experiments. The aircraft accomplished this feat by flying roller-coaster-type trajectories, traveling 500 mph at an altitude of approximately 12,000 feet. The trip was euphoric for some, but gut-wrenching for others.



Above (left to right): Michael Bacich, Megan Sala, Jamie Kelso, and Mike Severson.

Cover: Aaron Frechette conducting zero-gravity experiments with Professor Mark Weislogel on NASA's "Vomit Comet."

to help Iraq reconstruction

By Peter Cameron
THE DAILY CARDINAL

The war ended in a flash, but the rebuilding process of Iraq has not gone as smoothly, according to some soldiers who remain frustrated.

At Fort McCoy, near Sparta, Wis., many were called up for battle only to have the war come to a close before being deployed to Iraq. Chief Warrant Officer David Boetcher, a technical specialist in ammunition, was one of these soldiers.

"Last week we were told our mission in the Gulf was cancelled. We don't know what we're doing now," he said.

One of the largest military bases in the midwest, Fort McCoy is full of troops waiting for assignment.

"Some units are being redeployed to missions around the U.S. filling in for units that went in [to the Gulf]. Some units will probably still go over to clean up and get everything back," Boetcher said.

Currently in Iraq, the Army Corps of Engineers is working with the Iraqi Oil Company and the American company Kellogg, Brown & Root on the oil wells.

Army Corps of Engineers Spokesman Scott Saunders said progress is being made.

"[They] have put out fires in the southern oil fields and got oil flowing [last week] in a minimal sort of

IRAQ, PAGE 3

Redefining music



CAROLYN BARRY/THE DAILY CARDINAL

UW-Madison sophomore Adam Bradshaw of Redefined, a campus-based co-ed a cappella group, belts out a solo at the Wisconsin Union Theater Tuesday.

PIPES MID-EAST VIEWS

By Beth Skopp
THE DAILY CARDINAL

Heated words filled Memorial Union Tuesday after Middle East expert and media analyst Daniel Pipes spoke about Iraq, terrorism and Arab-Israeli conflict.

Controversy surrounds Pipes, the founder of Campus Watch (<http://www.campus-watch.org>), a Web site that lists academics who are critical of U.S. and Israeli policies in the Middle East. Pipes has been accused of making racist comments toward Muslim people.

"I fear the repercussions of his speech," UW-Madison special student Shahin Kalili said. "I am personally offended [by him] because every day Muslims and other Middle Easterners in general are portrayed in the media very badly."

Kalili, along with others, stood outside the union prior to the event holding signs expressing distaste for Pipes' statements.

"I think he has a right to speak, as anyone else does, but we know he's going to be against Islam," UW-Madison junior Jennifer Curti said. "I'm here because Daniel Pipes purports himself to

be an expert on the Middle East, but I think he's using his credibility to promote hate."

Pipes spoke at length of the conflict between Palestinians and Israelis. He said he thinks the situation is a black and white issue in which peace talks cannot begin until Palestinians accept Israel's right to exist.

"It is my goal that U.S. policy concentrate and work with Arab leaders to gain acceptance," Pipes said.

Throughout Pipes' speech, people held up small signs reading things like "false" in silent protest. When the floor was

open, many people ran to question Pipes' controversial views. More than four times, the session was interrupted because people began verbally attacking Pipes.

"I would be more impressed with the University of Wisconsin if it could ask me questions without insulting me," Pipes said.



PIPES

As a follow-up to Pipes' presentation, UW-Madison Professor of anthropology and religious studies Charles Hirschkind presented the counterpart to Pipes' talk. The two were originally supposed to debate, but Pipes would not agree to that plan.

"I was under the assumption that my presence is to foster a dialogue on this topic," Hirschkind said. "I found out yesterday, however, that it was preemptive because Daniel Pipes said he wanted to share a stage with no one."

Hirschkind also touched on Pipes and his Campus Watch program. Pipes said the program looks to fix flaws in Middle Eastern studies. Hirschkind said Pipes' Web site blacklists teachers who express unpatriotic views.

"The demonizing of Muslims is prevalent here at home. These people are being held for no reason. This is McCarthyism," Hirschkind said. "It is a statement like this that Pipes would say is un-American and my name will go on the Campus Watch Web site."

UW-Madison engineering projects to take flight with NASA

By Maeghan Killeen
THE DAILY CARDINAL

This week some Badgers are finding themselves in a strange new environment: zero gravity.

The Flying Badgers, three teams of UW-Madison undergraduate engineering students, traveled to the Johnson Space Center in Houston this week to participate in NASA's Reduced

Gravity Student Flight Opportunities Program. These three teams will compete against 69 other teams from top universities across the country.

One project this year is to develop and research a non-mechanical electromagnetic compressor. If it works, this invention could be a replacement for wide applications, from refrigerators to

fuel injectors.

"It's a very, very challenging project," said sophomore Ryan Currius, team captain.

Some of the advantages to having a non-mechanical compressor include a smaller energy requirement, less need for repair of broken parts and a virtually

NASA, PAGE 3

"...the great state University of Wisconsin should ever encourage that continual and fearless sifting and winnowing by which alone the truth can be found."



LIZ SHAFFER-WISHNER/THE DAILY CARDINAL

UW-Madison students and faculty hold up a poster made of 1,500 cards signed by students against the SEVIS fee at a listening session in Bascom Hall Tuesday evening.

student affairs, cited the Immigration and Naturalization Service and Homeland Security Department's disorganization and unreasonable deadlines as culpable for the new fee.

"We're meeting with representatives from the Homeland Security Office and ... the Federal Government who are trying to

implement this," Hong said. "We're trying to ... say 'What is this about?' and trying to give them some sense of the impact that this is having on international students and scholars."

This response, and others like it, failed to appease the audience who continued to demand change as they left the room.

Saunders said the Army Corps of Engineers has the capability to help in the rebuilding process.

"There's a lot [the Corps] can do to get the country back on its feet, with construction, watershed planning, etc., but it's all speculation," he said.

Meanwhile back in Wisconsin, the called-up reserves are trying to deal with their situation.

Staff Sergeant Micheal Bonds, a nine-year veteran stationed at Fort McCoy, said soldiers must look for ways to keep themselves busy while

waiting for orders.

But time is not the only thing being lost at Fort McCoy. According to Boetcher, tax law states any individual serving in a combat zone is exempt from paying both federal and state taxes. Since soldiers at Fort McCoy have not yet been to Iraq, they do not qualify.

"A lot of people are taking a big economic hit by being here," he said.

For many soldiers waiting at the Fort, the solution is simple.

"Either send me to the Gulf or let me go home," Boetcher said.

NASA

CONTINUED FROM PAGE 1

nonexistent noise level. It could be built on a smaller scale than current compressors and be capable of compressing a fluid that could exist in two phases, liquid and gas, which standard mechanical compressors cannot currently do. Ideally, the compressor would be strong enough to overcome gravity, so it could be used at any angle. All these properties would make it an optimal piece of hardware for use in space, Curtiss said.

The group first conceived the project in September 2002. A proposal was sent to NASA in October and accepted in December, when the team was given their flight date. Then the actual construction of the compressor began.

In theory, when a refrigerant is run through the compressor, a computer will time a line of magnets within it to fire sequentially. These ordered magnetic pulses would push an iron-like liquid along the tube to compress the refrigerant.

"In theory" are the key words. "I honestly don't think it's going to work," freshman Andy Selvig said.

"We're not going to consider it

a failure if it doesn't compress," Curtiss explained.

Only about 70 percent of the project's original goals were met for their project last year.

However, it's the learning experience they say is the most valuable aspect of the project to all the team members. In one of the only almost entirely faculty independent opportunities for hands-on research for undergraduates on campus, there are no right answers.

"You can know the math and physics and teachers can give you problems from a book, but until you do something with it, it's not worth much," Selvig said.

After six months of work it is now the hour of judgment. The team will spend this week in Houston with about 10 other teams from around the country.

The flights for each team are scheduled for two days, two and a half hours in the air each time. They will test the compressor's performance in micro gravity and then return home to write up a report.

If the compressor shows positive results, Curtiss said they might continue to work on it next year or pass their designs off to a biotech company.

"It's not going to be the end after we fly it," Curtiss said.

Last call for hopping on the soapbox.

The Daily Cardinal is accepting submissions for **opinion columnist** positions through Friday. Send your 650-word submissions to opinion@dailycardinal.com.



Don't worry. There's more Kleefeld right around the corner.



Ahh. That's better.

our heart?

er Actor Pastor Artist
ounselor Spiritual Director



Donate

LIFE SAVING PLASMA

and earn over

\$250 In a Month!!

It's fast, safe & easy!



Managing Editor (291-1445)
1586)
291-1484)

Page of the weekB8

SUNDAY, APRIL 6, 2003

■ Metro BriefsB10

■ It's your governmentB8

Up, up and away

UNI group headed toward zero gravity



GREG BROWN / Courier Staff Photographer

University of Northern Iowa science students, from left: Erin Regel, Michelle Montgomery, Leah Goepferd and Kate Leibold, will travel on NASA's KC-135A plane as part of a reduced gravity program. They leave Wednesday.

By **TERRY HUDSON**
Courier Staff Writer

CEDAR FALLS

University of Northern Iowa senior Kate Leibold will soon be taking her second trip on NASA's "vomit comet."

A year ago Leibold was one of four UNI students who took their electrochemistry experiment on board NASA's KC-135A jet. The group was one of 54 across the country selected.

UNI students were chosen again this year, and Leibold will be going with three new cohorts. They are seniors Erin Regel and Michelle Montgomery and sophomore Leah Goepferd.

The students begin training in

Houston on Wednesday, and they will be gone 10 days.

"I'm definitely nervous," Montgomery said. "It's going to be a completely new experience for three of us, so there's some nerves going into it."

The training includes instruction in the maneuvers the jet will perform and a trip into a hyperbaric chamber. Forty high-speed dives toward Earth at 500 mph will allow the group to experience 30-second bouts of weightlessness.

Leibold has been trying to explain the experience to her fellow students.

"The plane goes up and down but it feels level the whole time, except that you're floating," Leibold said. "The hardest part is when you pull out of the

dive and you're at two G's — twice the force of gravity — so you're sucked to the floor. That's when people get sick."

The team will investigate the effects of microgravity on the experiment. That experiment includes using two different chemicals that when mixed together make a metal nanoparticle. The group is using the metals platinum and palladium. The particle is contained in a spherical polymer.

After the flight, the students will go to Texas A&M University in College Station, Texas, to analyze the samples using transmission electron microscopy.

Goepferd said she's looking forward to training with NASA personnel and having fun doing it.

"I'm looking forward to doing a somersault in zero gravity," she said.

The students said they have been spending about 20 hours a week on their experiment.

"I think we've learned a lot, and we've had the backing of a lot of people helping us understand the problem," Regel said.

The group has had help in funding from the Regal Plastics Co., out of Waterloo, and help with the experiment from Bruce Early of the Industrial Technology Department at UNI.

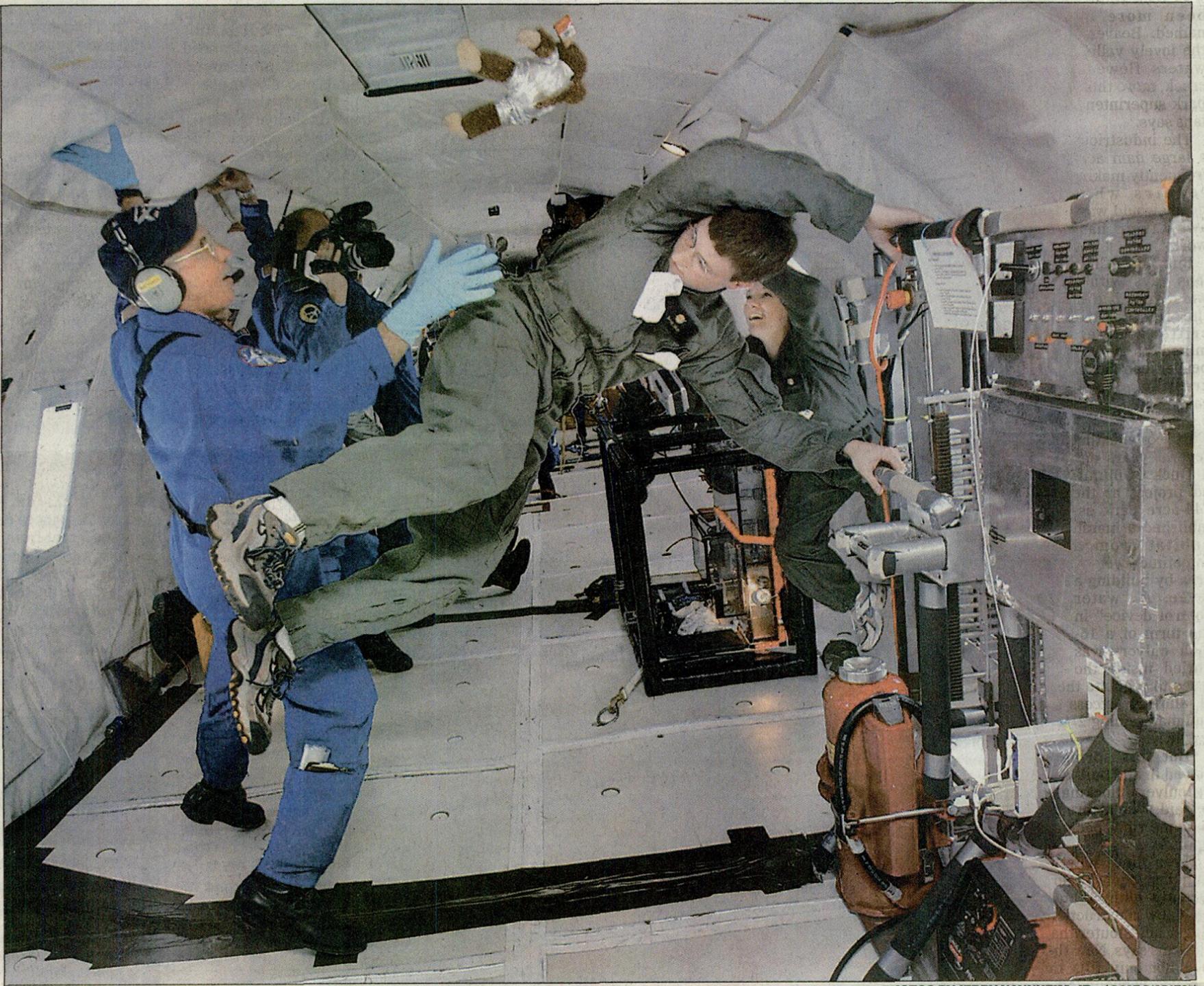
"We hope this encourages people to come to UNI and take advantage of the opportunities offered here," Leibold said.

EVERYDAY

INSIDE TODAY **OUR OWN ODDITIES**

Find out how to submit your own oddity.
EVS

COMING MONDAY
What's it like to be a caddie in
St. Louis?
In Everyday



PHOTOS BY JERRY NAUNHEIM, JR. / POST-DISPATCH

Michael Dancer (center), 21, an aerospace engineering student at the University of Missouri at Rolla, operates a welding apparatus in a weightless environment aboard an aircraft over Houston in July. Giving Dancer a hand is John Yaniec of NASA. Behind Dancer, Rachel Wittrock of Oregon State University chases a stuffed teddy bear that has floated away.

Weld done, UMR!

Four University of Missouri at Rolla students ride the "Vomit Comet" to perform weightless experimental welding at 30,000 feet as they take part in a NASA program designed to attract collegians to careers in aerospace engineering. And we have pictures.

BY JOHN M. MCGUIRE
AND JERRY NAUNHEIM JR.
Of the Post-Dispatch

HOUSTON

Imagine being put in a catapult and launched way up into the air at a 45-degree angle. You rocket upward, reach a crest and begin free falling.

Just when you're about to hit the ground, another catapult gently catches you and throws you back. Now repeat this sequence 32 times.

You've just experienced the "Vomit Comet." For a week in late July, four aerospace engineering majors at the University of Missouri at Rolla became extremely familiar with exactly how and why this "comet" got its nickname. They were part of a major effort by the National Aeronautics and Space Administration to increase college students' interest in aerospace careers.

This meant these four students got to spend a couple of hours flying and floating and doing weightless experiments in welding, often as high up as 30,000 feet.

The main reason the UMR foursome decided on weightless welding is so that someday perhaps all repairs and building additions to the Space Station or a shuttle in space could be done in orbit instead of on Earth.

Once the students were airborne, it looked as if they were in a weightless environment. See Comet, EV4



Students from UMR sit dejectedly as the deadline for completing their NASA project passes in April. The welding apparatus (right), which was designed to operate in a weightless environment, kept jamming. After working out the bugs, the students got a second chance. The students are (from left) Kathy Gallagher, Regan Tackett, David Harris and Adam Gorrell.

Comet

UMR students do experiment for NASA

Continued from EV1

if their four-engine aircraft maneuvered in a high-flying, roller-coaster pattern, leaving an exhaust trail shaped like the Gateway Arch.

On board, there were cries about the approach of Mars and moonlike gravity, and a few sounds of a person wrenching. Everyone aboard carries a barf bag, hence the aircraft's nicknames of Vomit Comet and Weightless Wonder.

After rising at a 45-degree angle, the aircraft loops to hit zero gravity for 25 seconds of weightlessness, then pulls out at 1.8 Gs. The cabin speaker blurts out — "Feet down, coming out."

That means the flip-flop weightlessness is ending, and the body will be loaded down at twice its normal weight. Feet must be on the floor — if they're not, the body could slam down, head first.

John Yaniec, lead test director for NASA's Reduced Gravity Student Flight Opportunities Program, said that while a third of the student riders still get sick on board because of the intense motion and gravity pull, preflight medication has greatly reduced this problem.

Yaniec is someone who rooted for this group of students from Rolla. They were the first Missouri class to do a NASA anti-gravity flight test, although 80 teams from colleges across the country participate each year. Student teams qualify each year by submitting a detailed proposal of their experiment to NASA.

"They made it clear that this (the welding experiment) is one of the most complicated experi-

ments ever flown," said Michael Dancer, a UMR aerospace engineering major from Poplar Bluff who was one of the four fliers. "So when you have an opportunity like this, you just have to jump on and get it done."

Essentially, the Rolla students wanted to determine how strong a weld completed in a weightless environment compared to one done on the ground. In April, they spent 20 continuous hours, with no sleep, trying to get their experiment to work but failed because the welding apparatus kept jamming. In a rare move, NASA gave the students another chance in July after they were able to work out the bugs. They returned to the Johnson Space Center determined to succeed.

To do that, the students had to build a robotic welder to contain the intense heat of the equipment so it would be safe onboard the aircraft. Then they had to tweak the mechanism that jammed in April, making sure the welding strips fed through the welder smoothly.

"When we got back to Rolla and took the machine apart, we found the aluminum rollers that pull the metal under them had worn smooth and were slipping, like old tires do," explained UMR team coordinator David Lee Harris of Cameron. "So we replaced them with hard steel rollers. From then on, we didn't have too much left besides tuneups and slight improvements here and there."

The Vomit Comet is known militarily as a KC-135A, an old Boeing 707 airliner that started out in 1959 as an Air Force aerial tanker. NASA converted some of these into weightless machines, and, from 1973 to 1995, the space center used them to train astronauts in microgravity experiments.

In the 1995 movie "Apollo 13," the filmmakers used a KC-135

aircraft to shoot weightless scenes based on the actual Apollo 13 space accident in April 1970 that produced the famous call to Mission Control: "Houston . . . we've got a problem."

The KC-135A was the command module for Tom Hanks (who played astronaut Jim Lovell) and other cast members in the film directed by Ron Howard.

Two-Gs is "the point where most people lose it," said Dancer. "As far as getting sick, I never felt anything that my body didn't like."

However, Harris did lose it, as the "parabola" — the name for this arch-shaped flight maneuver — got to him. But as a NASA doctor at the space center later told Harris, he wasn't as bad off as other college students who had to be forklifted off the aircraft.

"I was getting woozy and nauseated, so I had to keep my eyes focused on one spot," said Kathy Gallagher, 21, a senior from Vichy, who rode with her younger brother Jason, 19.

"On the ascent, it was similar to Tom's Twister at Six Flags," she said, and sure enough, much of this does appear to be similar to amusement-park rides. "But I would love to work for NASA and help design shuttles," she added.

That's something Donn Sickorez, head of the NASA university affairs office at the space center, likes to hear.

"This program has been around for eight years, and what we're trying to do is help U.S. students become scientists and engineers," he said. "In the past 10 years, enrollments have been going down, from an 8 percent drop in 1986 to 5 percent in 1998. In 1997, Asia produced 43 percent of all the scientists and engineers worldwide, with Europe supplying 34 percent and all of North America only 23 percent.

"Those numbers give concern to a lot of folks," Sickorez said.



JERRY NAUNHEIM JR. / POST-DISPATCH

Adam Gorrell, 22, an aerospace engineering student at the University of Missouri at Rolla, assembles a welding apparatus in a hangar at NASA's Johnson Space Center in Houston. The apparatus will be used in experiments on welding in a weightless environment aboard a KC-135A, seen in the background.

The microgravity flights usually last from two to three hours, with the plane making 30 to 40 parabolic maneuvers as the students aboard do various weightless experiments.

Besides the four UMR fliers in Houston, a ground crew of five from Rolla helped assemble the apparatus before the flights. They were aerospace majors Adam Gorrell, 22, Oak Grove; Regan Tackett, 24, West Plains, and

James Tinsley, 21, Poplar Bluff; plus Rolla High School students Kartik Balakrishnan, 15, and Andrea Krive, 17.

While all four UMR flying welders remarked on what a thrilling experience the NASA experiments were, the most delighted seemed to be Dancer, who ultimately wants to become an astronaut.

"That's what I've lived for," he said. "My parents tell me I've

been that way since I was 3. I remember I always climbed trees because subconsciously I wanted to be as high as I could be."

In late July, welding away on the Vomit Comet, he went higher than any of those trees he'd climbed in Poplar Bluff.

John M. McGuire
E-mail: jmmcaguire@post-dispatch.com
Phone: 314-340-8242

Jerry Naunheim Jr.
E-mail: jnaunheim@post-dispatch.com
Phone: 314-340-8280

Life After the Co-op Program - What Do You Do Then?

Students participating in the Engineering Co-op Program receive many accolades for their work experience, including scholarships, company and University recognition, and technical elective credit. Through the Co-op Program, students perform full-time work in their field of engineering and gain technical elective credit towards their degree. But what happens after a student finishes with the Co-op Program and is waiting to graduate? Some put that co-op experience to use in their own field of study!

Jamin Greenbaum, a senior in Aerospace Engineering, completed three co-op work terms with the Jet Propulsion Laboratory in California. Since completing the Co-op Program, Jamin has stayed busy on campus working with student organizations and forming a team for a NASA experiment this spring.

The NASA Reduced Gravity Student Flight Opportunities Program gives undergraduate students from 70 universities nationwide the chance to create an experiment to be performed in reduced gravity.

Jamin, along with four other aerospace engineering students, were chosen by NASA to work on an experiment aboard NASA's KC-135 airplane. The airplane is used to simulate weightlessness for astronauts in training. The team hopes the results of their experiment will increase the efficiency of combustion engines.

Jamin says of his experiences, "Looking back to my co-op experiences, I worked on teams where the energy level was very high and the projects we worked on had tough schedules and deadlines. That experience helped make the demands of the KC-135 project seem much more manageable. To do this project, our team has had to juggle deadlines that NASA placed on the program, several presentations that we have given to the community, and full-time academic loads. The project has been difficult, but like my co-op, it

has definitely been one of the most rewarding experiences I've had while at UT."

Congratulations to Jamin and his team. Co-ops do make a difference!



Ravi Prakash, Jeremiah Marichalar, Matthew Marek, and Jamin Greenbaum

*Does your student need a
GUIDE?*

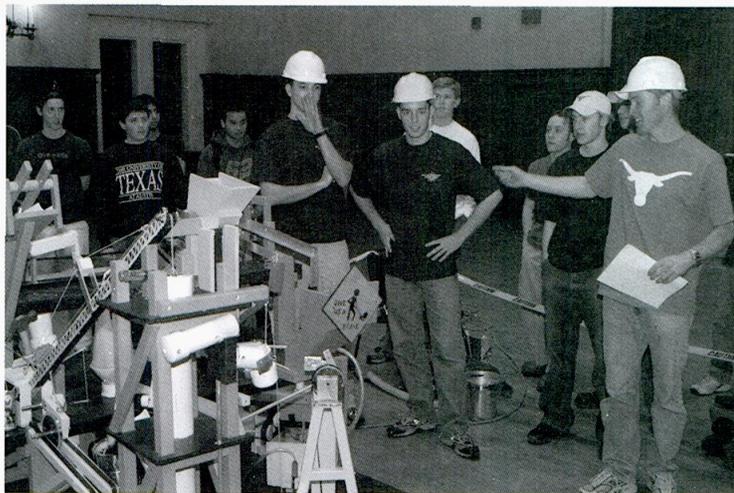
*Students can sign up online
at [http://](http://www.engr.utexas.edu/wep/Current/GUIDE/index.htm)*

*[www.engr.utexas.edu/wep/
Current/GUIDE/index.htm](http://www.engr.utexas.edu/wep/Current/GUIDE/index.htm)
for an industry mentor*

Lenart's team has seen little of the historic rivalry with the mechanical engineers, although until the final weeks, when forced to pull their entry, the mechanical engineers were feverishly preparing a worthy contraption. "I hear that there used to be a lot of spying back and forth," he says, "but I just concentrate on our project and don't pay much attention to that."

Why would students make the enormous time and energy commitment Rube entails, while classes and homework loom and social life beckons? Those who participate are passionate about their involvement, maintaining it's well worth the long hours and lost sleep. It pays off, they say, in a multitude of ways, from new technical skills, to enduring friendships.

The IEEE team took first place in the University's 2003 Rube Goldberg Machine Contest with their winning machine, "Liability Land". "We tried to pick a theme that would require nice colors and décor as well as offer many ideas to work into the machine," explained a team member.



The Institute of Electrical and Electronics Engineers (IEEE) team, captained by Catherine Befi, took first place in Monday night's (Feb. 17) Rube Goldberg Machine Contest, winning \$500 and a chance to compete in the national championships at Purdue University in April. Their creation, which depicted a theme park called "Liability Land," accomplished the task of crushing an aluminum can for recycling in 44 steps and a time of 30 seconds. It began with a miniature Batman hurtling down a zipline to initiate a series of mechanical actions which turned a ferris wheel, a carousel and a swing ride-among other things-and ended with the can crushed by a heavy tool box dropped from a height. The tool box was housed inside a replica of the university's Tower. Mousetraps and bicycle parts were among the household items used in its construction.

The electrical engineers were helped along by the presence of a mechanical engineer, freshman Jonathan Yates, on their team. "We recruited him before the American Society for Mechanical Engineers could," Befi says.

Theta Tau's elaborate frame machine, "Under Construction," was voted People's Choice.

Brody Knudeson, Theta Tau captain, explains the workings of his team's machine, which won the People's Choice Award at this year's competition.

*Rae Nadler-Olenick (College of Engineering, Public Affairs)
Rube Goldberg and Rube Goldberg Machine Contest
® © Rube Goldberg Inc.*

From the Dean



Dean Ben G. Streetman

Engineering is one of the most exciting and creative of all the professions. Engineers use science and math to achieve human purposes--to design and build the things people need, from bridges to microprocessors. Engineers also lead most of the high-tech companies in the world, and they account for much of the entrepreneurial activity that drives our economy.

My father, born in 1902, lived in an incredibly productive time that spanned the invention of the airplane and the landing of men on the moon. When I decided to make a career in semiconductors in 1960 there were no integrated circuits, and transistors cost about a dollar apiece (that would also buy five gallons of gasoline!). Now, integrated by the millions into memories and microprocessors, transistor costs are measured in

Engineers use science and math to achieve human purposes – to design and build the things people need, from bridges to microprocessors.

thousandths of a cent. I don't know what new technologies the 21st century holds. But I do know that those technical advances will be greater than those my father and I saw in this century. Also, I know that those technological advances will be made by engineers!

I'm happy that your student has decided to pursue a career in engineering. There has never been a more exciting time to be an engineer.

The College of Engineering at UT-Austin is one of the best in the country. We are ranked in the top ten nationally, and the top five among public institutions. Our students are able to study with faculty who are world-renowned in their fields of expertise. Therefore, your student has chosen a great field, and a great university to learn about it. You will learn more about the College of Engineering in the following pages that I hope will help you as you follow your student's progress.

A handwritten signature in black ink, appearing to read "B. Streetman". The signature is fluid and cursive.

Ben Streetman
Dean

Prerequisite

The



Newsletter for Parents
of UT Engineering
Students

May 2003

2003 Rube Goldberg Contest

The annual Rube Goldberg Machine Contest challenges students to engineer the most complex device possible to perform a simple task in 20 steps or more.

The University of Texas at Austin's Theta Tau engineering honors fraternity is the defending national champion. Last year the fraternity's entry, a "Tribute to the Heroes of September 11th," performed the designated task-raising and waving an American flag-in 70 steps, to claim first prize.

Organized into regional competitions by the national sponsor, Purdue University, the contest pays homage to an engineer-turned-newspaper cartoonist of yesteryear who made a career of drawing just such fanciful contrivances. The local winners earn a berth in the national finals on April Fool's Day on Purdue's Lafayette, Indiana, campus.

Each academic year, "Rube's" national sponsor announces a designated task. The contest is open to all engineering students through their



IEEE, with "Liability Land" placed first in Austin

engineering societies. Those planning to enter must pre-register.

Then they have to build their machines - no mean feat.

This year's Theta Tau captain, Brody Knudtson, faces a quite different challenge: to "select, crush and place a 12-ounce aluminum can into a recycling bin." Knudtson, a mechanical engineering senior, and Chris Nance, a civil engineering senior, are the 2003 team's stalwarts, with "a lot of people helping a little." Their theme is "Under Construction" and their machine is targeted to accomplish its task in 45 steps or more.

Two other University of Texas at Austin student organizations are supporting entries in 2003. They are the Institute of Electrical and Electronics Engineers (IEEE) and the American Institute of Aeronautics and Astronautics.

"It's harder to crush an aluminum can than you might think," says the Aerospace team captain Marcin Lenart.

The machine, which has the theme of an aerospace research and development facility, will perform its task in about 25 steps.

(continued on page 3)

ON THIS DAY IN HISTORY

On April 2, 1942, 75,000 Filipino and American troops captured on the Bataan Peninsula were forced to march to a prison camp on a journey now known as the "Bataan Death March." This came the day after they surrendered the main Philippine Island to the Japanese. The prisoners were given one meal of rice in their six-day, 85-mile march.

Science Floats

Aerospace engineering students conduct experiments while weightless in NASA vessel

By Lauren A. Smith • Daily Texan Staff

Four aerospace engineering majors got a taste of what it's like to be an astronaut last week. Seniors Jamin Greenbaum, Ravi Prakash, Matthew Marek and former UT student Jeremiah Marichalar took a \$10,000 flight onboard NASA's KC-135 airplane, used to simulate weightlessness for astronauts in training. It was also used to make the actors in *Apollo 13* float as if in

outer space.

"It's as close to being an astronaut as you might get — being able to float," Prakash said.

Becoming an astronaut and working for NASA is the goal of many students in the Department of Aerospace Engineering, he said.

The four students took off from NASA's Ellington Field in Houston April 1 and 2. Jerrod

Kogut, an aerospace engineering senior, stayed below as part of the ground crew.

While in the air, the team performed an experiment that could help increase the efficiency of combustion engines, such as those in jets. They did this by exploring the structure of a methane-fed jet flame. When they pulsed sound waves into the flame, it produced fewer pollutants. In March 2002, Greenbaum and two other students performed a similar experiment, which they proposed after NASA selected them to be part of its Reduced Gravity Student Flight Opportunities Program that began in 1995.

The program offers a chance for undergraduates from 70 universities across the nation to create an experiment that can be done only in reduced gravity. The students performed their experiments onboard the plane as it flew a series of 30 parabolas, each simulating approximately 25 seconds of weightlessness.

"It was much more intelligent and easier this year," said Greenbaum. "Last time we did it the brute force way. We took what we learned last year and applied it to a more complicated, scientific experiment."

When the fall semester began, Greenbaum, the only remaining member of the first team, started a search for dedicated and enthu-

siastic students to join a new team for this year's experiment and found Prakash and Marek. Marek had just completed a structural dynamics class that would prove useful in designing the new experiment. Prakash jumped at the chance after seeing the photos of last year's team onboard the KC-135 and speaking with a former team member.

Marek said the program gave him the opportunity to apply what he has learned in the past four years.

"It's a life experience," Marek said. "It's your idea. You have to make it happen. You take the classes and the theory, but this gives you a taste of the real thing."

Noel Clemens, an associate aerospace engineering professor, has served as the team's advisor for two years. He said the program offers a unique experience by allowing students to carry their own projects through every stage of development, from an idea to a working experiment to a final study with conclusive results.

"They get to apply their engineering knowledge to a real-world project," Clemens said. "This year's experiment was one of the more complex ones flown on the KC-135. The hands-on experience they gain in making such a system work will prove to be an invaluable part of their

education."

Before the three students could fly on the KC-135, NASA required that they undergo physiological training at the Johnson Space Center, in the same facilities used by astronauts before their flights on Tuesday and Wednesday. Training included time in the hypoxia chamber, a small room used to simulate a sudden drop in cabin pressure.

"The training was easier than I thought it would be," Prakash said. "As soon as we took off our masks and were getting less oxygen, some people were acting like they were drunk, but we did not feel the effects as much. Our only real symptom was that we had a slightly hard time understanding the directions on the little test they gave us."

Greenbaum said the experiment ran smoothly without any major problems.

"There were some safety issues, and we designed it with safety features to account for them. They made no suggestions to improve it, though. Everything went really well," he said.

Greenbaum and the rest of his team will spend the rest of this semester sifting through the data they collected from their experiment. They will present their findings to the Department of Aerospace Engineering in two weeks and submit a formal report, which will be used as

research material for the department.

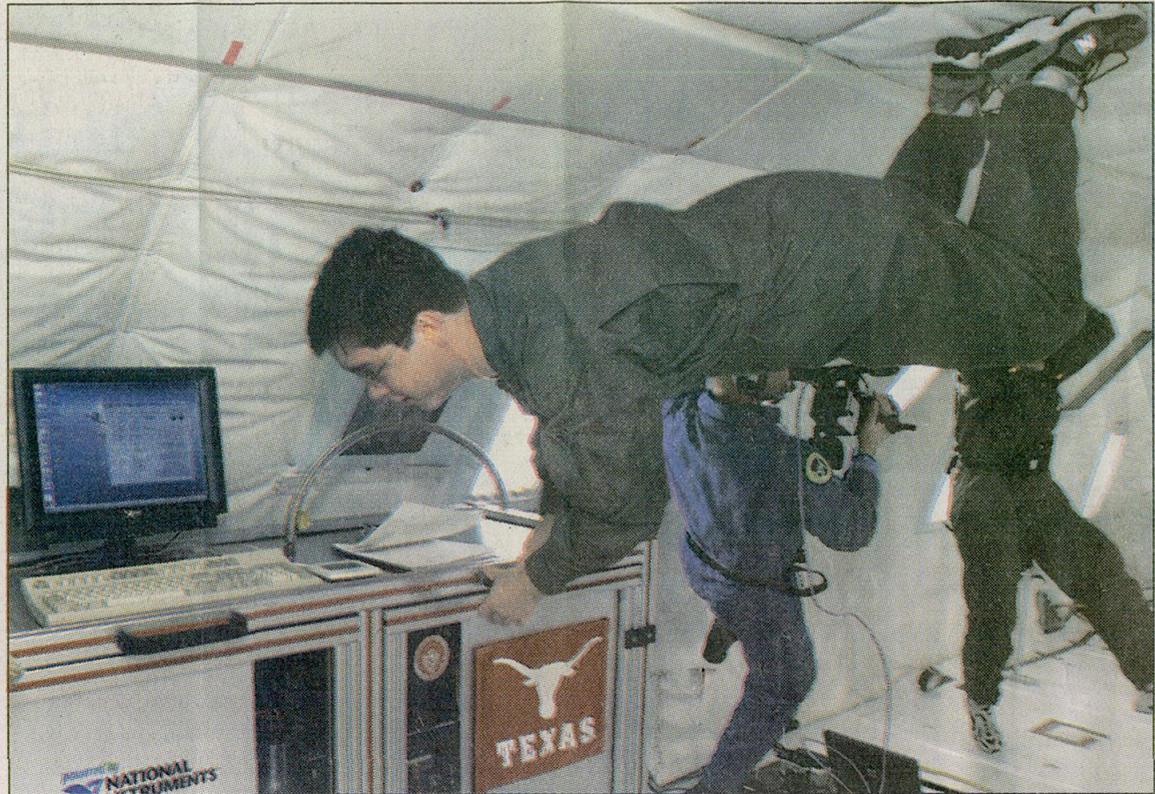
"It was an excellent experience," Greenbaum said. "We definitely represented UT extremely well. We had one of the more complicated experiments. We got accolades from the people at NASA for its looks and its performance."

Greenbaum said community outreach and education are important components of NASA's program. Each team is required to make a series of presentations about the program, their experiment and their university department. The team's outreach activities have ranged from activities at elementary schools to university presentations. The team also made a presentation during Explore UT on March 1. Prakash agreed about the importance of educating children about the field of engineering.

"We wish there was outreach like this when we were younger. I felt like at Explore UT, we really did that," he said.

Greenbaum said NASA's investment in the future of space exploration through the program has increased his respect and desire to work for the agency.

"We're right there in the middle of it," he said. "It's special to be sharing something with the astronauts."



Matthew Marek, an aerospace engineering senior, floats inside of a NASA airplane that simulates weightlessness as he prepares for the experiment he and four other students created. Marek and the others in the KC-135 airplane floated for 25 seconds at a time.

Photo courtesy of NASA

Aerospace engineering seniors Matthew Marek, above, and Jamin Greenbaum work on their experiment aboard NASA's KC-135 airplane. Their experiment was picked by NASA as part of a program to give students an opportunity to do experiments in reduced gravity. The data from their experiment could provide a way to make combustion engines more efficient and less polluting.



Photo courtesy of NASA

Subject: SEEK Thanks You

Date: Wednesday, November 20, 2002 5:57 PM

From: Roshan Easo <roshaneaso@yahoo.com>

To: "Jamin S. Greenbaum" <jaming@mail.utexas.edu>, Kendra Cox <kendra.cox@mail.utexas.edu>

Dear Kendra, Jamin, and the Aerospace KC-135 Team,

Thank you, thank you, thank you for all your hard work in putting together an awesome program. All the mentors involved will agree with me when I say that this was an inspiring program for our kids. It was fun, understandable, and enlivening. The ones that go on to engineering-related domains will always look back on this moment as one of their kindling memories that carried them on to pursue our profession and community.

Thank you, Kendra, for your work in arranging the administrative details. Jamin, a special thanks to you for your liason work, presentation arrangements, and for communicating to me that the presentation would be tailored for our group of kids and our objectives. And SEEK is indeed grateful to the Whole Team for carrying through on that promise.

If you ever need me to vouch for the work your team did for SEEK, please don't hesitate to contact me. Again, thanks to everyone for the time and effort put into this successful event.

Sincerely,

Roshan Easo, Corporate Relations

Student Engineers Educating Kids (www.utseek.org <<http://www.utseek.org/>>)

Phone: 512.495.2009

Mobile: 281.352.6666

Email: corporate2@utseek.org

P.S. Jamin, please do send on this letter of gratitude to the whole team.

Do you Yahoo!?

Yahoo! Web Hosting <http://rd.yahoo.com/hosting/maillsig/*http://webhosting.yahoo.com> - Let the expert host your site

Subject: FW: Protein Crystal Growth Tour

Date: Friday, February 21, 2003 1:14 PM

From: Kendra Cox <kendra.cox@mail.utexas.edu>

To: "Jamin Greenbaum (E-mail)" <jaming@mail.utexas.edu>, "Christopher Grant (E-mail)" <c.grant@mail.utexas.edu>

Chris and Jamin,

Thought you might enjoy this little note (see below) from TSGC - they really enjoyed your sessions. Thanks again and see you for Explore next Saturday!!

Thanks,
kendra

> -----

> From: Margaret Baguio

> Sent: Thursday, February 20, 2003 3:37 PM

> To: Kendra Cox

> Subject: RE: Protein Crystal Growth Tour - FINAL Times

>

> Kendra:

>

> I wanted you to know that the students did an outstanding job with the presentations. The flight simulator was interesting and Chris explained procedures and involved all the students. Jamin and the KC-135 crew were informative and educational. They certainly motivated these students. Thank you for coordinating these activities. It was a highlight for these students loading flight samples.

>

> It is always a pleasure to partner with you to educate youth about space science. Thanks!

>

> Margaret Baguio

> Education and Outreach Coordinator

> Texas Space Grant Consortium

> 3925 W. Braker Lane, Suite 200

> Austin, Texas 78759

> Phone: 512-471-6922

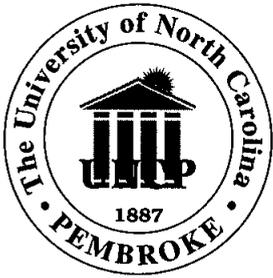
> Fax: 512-471-3585

> <http://www.tsgc.utexas.edu>

> <http://www.csr.utexas.edu/grace>

>

>



Department of Chemistry and Physics
One University Drive
P.O. BOX 1510
Pembroke, NC 28372-1510
(910) 521-6247

April 28, 2003

Donn Sickorez
Johnson Space Center
Mail Code: AH2
2101 NASA Road 1
Houston, TX 77058-3696

Dear Donn:

On behalf of the *Weightless Lumbee's* from the University of North Carolina at Charlotte and UNC Pembroke I want to thank you for everything during our experience at Ellington Field. I was most impressed with you and the rest of the Reduced Gravity Office staff, and I am not just saying this to be nice. You are all truly one of NASA's best assets. It was especially kind of you to come in on the weekend while we modified our experiments in order to pass the TRR. I know the students had a once in a lifetime experience and have not stopped talking about it since we returned. In fact, they are already making plans for next year!

Thank you once again and I look forward to working with you and your colleagues again.

Sincerely,

A handwritten signature in black ink, appearing to read "Timothy M. Ritter".

Timothy M. Ritter
Associate Professor of Physics

Student Tells Congress Her NASA Educational Experience Was 'Awe Inspiring'

by Gregg Kleiner

Marcia Whittaker, a senior studying nuclear engineering at Oregon State University, had the rare experience of testifying before the U.S. Senate Subcommittee on Science about how her involvement with a NASA research project through OSU has been "life changing" and "awe-inspiring."

Whittaker, who grew up in a small town in eastern Oregon where education "was not the top priority," told the committee that "in a small farming and lumber community, it is difficult to interest parents and children in the pursuit of knowledge when mills are closing and crops are failing."

She urged Congress to continue to fund NASA's educational outreach programs because these programs are "inspirational education," and have the potential to "inspire" an entire generation of young people to study science and engineering.

As a freshman at OSU, Whittaker discovered that a group of undergraduates were involved with NASA's Reduced Gravity Student

Flight Opportunities Program (RGSFO), and immediately signed on.

Since then, she has traveled three times to Ellington Field in Houston, where she has flown on NASA's KC-135, affectionately called the "Vomit Comet" because of the aircraft's sudden plunges that imitate a zero gravity environment. Experiments that Whittaker and other OSU students helped design and build have been tested in the zero gravity environment of these flights.

Oregon Space Grant, based at OSU and directed by Dr. Andrew Klein, provided scholarship support and leadership for Whittaker and other OSU students involved with the NASA program.

Whittaker said the "true genius" of the NASA program is how it inspires high school and elementary students to study science and engineering. The program requires college participants to speak to groups about their NASA experiences.

"I am now able to return to my very small high school and give the students the inspiration that I was lacking," Whittaker said. "The students who spoke of NASA in whispers now send me emails about how they are going to college so they can participate in this program, too."

Ron Adams, dean of the OSU College of Engineering said that attracting more students to engineering is key to building a top-ranked engineering program at OSU. "We welcome committed students like Marcia Whittaker to OSU Engineering," Adams said. "These students are the living wells out of which flow the creative ideas that will ultimately help build a better future for all of us."

OSU Engineering alumni William Oefelein and Donald Pettit have both received flight assignments on upcoming NASA Space Shuttle flights, and meet with the OSU students when they are in Houston.

Senator Ron Wyden, who chaired the hearing, called for tripling the number of science and engineering graduates by 2012 and dramatically increasing the number of women working in these fields. Sean O'Keefe, Administrator for NASA and former Secretary of the Navy, requested \$61.6 million for NASA's educational programs for next year and said education is an official core mission of NASA.

Whittaker said she hopes her fourth year of college at OSU will be "no less amazing" than her first three.

Left: Marcia Whittaker, an engineering student at Oregon State University, recently testified to a Congressional subcommittee about her experiences working with NASA, including this experience of simulated weightlessness aboard the NASA aircraft known as the "vomit comet."



The Oregon Space Grant Reporter

Viewing the World from a Different Angle

SUMMER EDITION

AUGUST 2002

Inside this issue:

Student Testifies Before Congress	2
Graduate Fellowship Recipients 2001-2002	3
FIRST Robotics Competition	4
Undergraduate Scholarship Recipients	5
Young Inventors SMILE Challenge	6
OSG Welcomes Newest Affiliate	7
The Space Grant Network in Oregon	8



How To Contact Us:

Oregon Space Grant Program
Dr. Andrew Klein, Director
Oregon State University
130 Radiation Center
Corvallis, OR 97331-5902

Phone: (541) 737-2414
FAX: (541) 737-0480

kleina@ne.orst.edu

Visit us on the web:

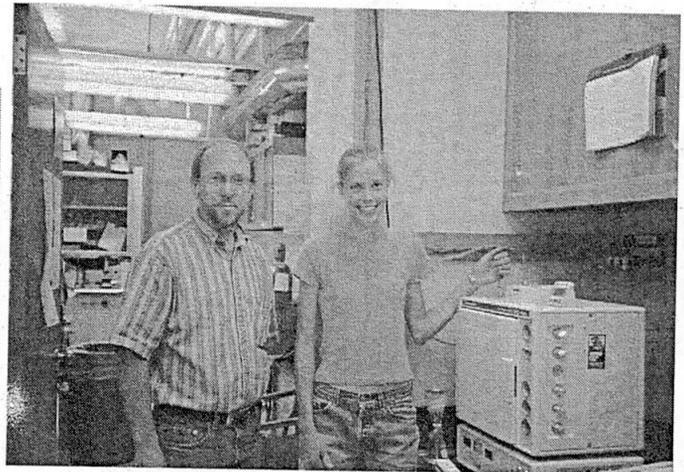
<http://www.ne.orst.edu/spcgrant/index.html>

Contact the OSG News Editor at: tingle@enr.orst.edu

ASE Program Has Direct Benefits for NASA

While most students this summer are at the pool, on vacation, or hanging out at the local mall, a select few students are busy at work in research labs across the state. These high school students are part of a prestigious apprenticeship program that pays them for their work with local research scientists. "Students get real exposure to the research experiences very early in their careers," says Dan Arp about the ASE program. Dr. Arp has been involved with the Apprenticeships in Science and Engineering Program (ASE) for eight years now. ASE, a program of Saturday Academy, is an eight-week, full-time summer internship program for 9th-11th graders. The program includes a Mid-Summer Conference and Presentation Symposium.

This year, Dr. Dan Arp, Professor of Botany and Plant Pathology at OSU, is hosting Betsy Verhoeven, a student from West Albany High School. Betsy is working on a bioremediation project. She is looking



Dr. Dan Arp and Betsy Verhoeven in the Botany and Plant Pathology lab at Oregon State University. Picture taken by Betsy Rollins; Courtesy of the ASE program.

at the use of bacteria to remediate contaminated environments. More specifically, she is working on a bacterium that would be useful in cleaning up chlorinated aliphatic compounds. An example is trichloro ethylene (TCE), a solvent previously used in the dry cleaning industry and currently used as a degreasing solvent. TCE is an effective degreaser because it is flame resistant and does not break down easily. However, these positive attributes that make it an effective solvent, also make it difficult to discard and clean up. The bacterium Betsy is studying can

help to break TCE down through a process called co-metabolism. "We use the Pac Man analogy," says Dr. Arp. "Pac Man goes around eating points but sometimes he gets points that are poisonous." It is similar for the bacterium Betsy is studying. The enzyme that the bacteria produces to harvest substrates, will also act on these pollutants but it does not help the bacteria. In fact, it often harms the bacteria. Professor Arp believes that if we are to harness these bacterium for clean-up we need to understand the toxicity to the bacterium.

(Story continued on page 3)

5730
9-28

AUG 08 2003

The Honorable Barbara A. Mikulski
United States Senate
Suite 709
Hart Senate Office Building
Washington, DC 20510

Dear Senator Mikulski:

I thought you should know about the outstanding work being accomplished by the office of the Student Reduced Gravity Program at the Johnson Space Center in Houston, Texas. A group of five Naval Academy midshipmen, three men and two women, carried out an experiment on the KC-135 airplane to simulate the necessary weightless environment in which they evaluated a spacecraft deployment mechanism they designed. In the end, this experiment provided an unparalleled educational opportunity that was a thrilling experience of a lifetime. Enclosure (1) is a copy of the letter sent by these midshipmen to the marvelous folks who supported this very enriching endeavor.

This program provides a unique opportunity for students to put into practice what they have learned in the classroom and in the laboratory. It also excites their peers and juniors who are inspired by their enthusiasm for research. In addition to creating a web site, the midshipmen participated in an outreach program to local schools. This is an important tool to help us attract young students into science and engineering by exposing them to the wonders of space research through discussions with undergraduate students close to their age.

As you may be aware, the students must formulate a proposal, submit it to NASA, and have it favorably evaluated in a very selective competition for the limited number of flight opportunities. If selected, they must develop the instrumentation and test procedures to carry out the experiment. As part of their outreach program, our students spoke at two local elementary schools, at a program in Baltimore for underprivileged high school students, and at a meeting of engineering students at the Naval Academy.

The NASA Student Reduced Gravity Flight program provided an unparalleled, unique and rewarding service to our students. Thank you for your continued support of NASA educational outreach programs.

Sincerely,

RODNEY P. REMPT
Vice Admiral, U.S. Navy
Superintendent

Enclosure: Letter to NASA Reduced Gravity Flight Program

→ Copy to: D. Sickorez, PhD, NASA-JSC

DEPARTMENT OF THE NAVY

OFFICE OF THE SUPERINTENDENT
U.S. NAVAL ACADEMY
121 BLAKE ROAD
ANNAPOLIS, MARYLAND 21402-5000

OFFICIAL BUSINESS



**DONN G SICKOREZ PHD
MAIL STOP AP2
UNIVERSITY AFFAIRS OFFICE
NASA JOHNSON SPACE CENTER
2101 NASA ROAD 1
HOUSTON TX 77058**

77058+3691 13





DEPARTMENT OF THE NAVY

UNITED STATES NAVAL ACADEMY
121 BLAKE ROAD
ANNAPOLIS MARYLAND 21402-5000

02 MAY 03

From: R.G. Baumez, MIDN 1/C, USN
T.G. Kolwicz, MIDN 1/C, USN
M.R. Krueger, MIDN 1/C, USN
A.M. Madson, MIDN 1/C, USN
J.K. Van Zeyl, MIDN 1/C, USN

To: D. Sickorez, Affairs Officer, Co-director NASA Reduced Gravity Flight Program
Via: V. Pisacane, Professor, USNA Aerospace Department

Subj: Thank You

Sir,

On behalf of the United States Naval Academy and ourselves, we would like to thank you for your involvement in the Reduced Gravity Student Flight Program. This project was a wonderful opportunity for our professional and academic development. The expertise and professional standards of the personnel involved in this project are also commendable. Our department at USNA plans to apply for subsequent experiments for inclusion in this program in the years to come. As future Naval Officers, we hope to one-day return to work in the field of space research. Again, please accept our sincerest gratitude for your effort and that of those at Ellington Field for making this program a success.

Very respectfully,

R.G. Baumez
MIDN USN

T.G. Kolwicz
MIDN USN

M.R. Krueger
MIDN USN

A.M. Madson
MIDN USN

J.K. Van Zeyl
MIDN USN



SPACE GRANT CONSORTIUM

Academia, Government and Industry: Reaching for the Stars

August 7, 2003

Mr. Donn Sickorez
NASA – JSC Microgravity University Office
Mail Code AH2
2101 NASA Road One
Houston, TX 77058

Dear Donn:

The LiftOff Summer Institute continues to be rated as one of the best, if not the best, workshop teachers have ever attended. We appreciate your role in making the LiftOff 2003: Exploring the Unknown a huge success. The teachers thoroughly enjoyed the tour of the KC-135 and learning more about microgravity research.

The teachers rated the tour as excellent, even with the heat and the hurricane. We heard several teachers share excitement about climbing inside the vomit comet and viewing the tape of experiments being conducted onboard. They will definitely share this information in their classrooms and with other educators. Sharing information about space science and microgravity gives teachers the background they need to instill excitement and enthusiasm among their students.

Thank you for helping to make LiftOff a success. Your support of this event and of youth development and education in general, is highly regarded. We appreciate you partnering with the Texas Space Grant Consortium to provide this opportunity for teachers.

Sincerely,

Margaret Baguio
Education/ Outreach Coordinator

Talia Jurgens
Administrative Associate

THANKS



AMERICAN GREETINGS
...says it best[®]

AGHC GBTY-5A

www.americangreetings.com
America Online Keyword: AG

AMERICAN GREETINGS
CLEVELAND, OH 44144

CARLTON CARDS
TORONTO, ONTARIO M8Z 1S7

© AGC, Inc.
MADE IN U.S.A.

Space Science Rocks
and SO DO YOU!!

P.S

I love it whenever I
wear the KC-135 T-shirt
and people question me about
it AND I have the answers!
"

Dear Ms. Barb Ebadat
and Mr. Donn Sickorey,
What an amazing
experience zero-Gravity,
KC-135 plane & science
experiments! What a
terrific and monumental
moment!! Thanks for
your hospitality. I always
wear my T-shirt w/ pride!
Sincerely,
Michelle Martinez



SPACE GRANT CONSORTIUM

Academia, Government and Industry: Reaching for the Stars

August 7, 2003

Ms. Barbara Ebadat
NASA – JSC Microgravity University Office
Mail Code AH2
2101 NASA Road One
Houston, TX 77058

Dear Barb:

The LiftOff Summer Institute continues to be rated as one of the best, if not the best, workshop teachers have ever attended. We appreciate your role in making the LiftOff 2003: Exploring the Unknown a huge success. The teachers thoroughly enjoyed the tour of the KC-135 and learning more about microgravity research. Thank you for arranging for badging and coordinating the tour times and facilities.

The teachers rated the tour as excellent, even with the heat and the hurricane. We heard several teachers share excitement about climbing inside the vomit comet and viewing the tape of experiments being conducted onboard. They will definitely share this information in their classrooms and with other educators. Sharing information about space science and microgravity gives teachers the background they need to instill excitement and enthusiasm among their students.

Thank you for helping to make LiftOff a success. Your support of this event and of youth development and education in general, is highly regarded. We appreciate you partnering with the Texas Space Grant Consortium to provide this opportunity for teachers.

Sincerely,

Margaret Baguio
Education/ Outreach Coordinator

Talia Jurgens
Administrative Associate

INDEX

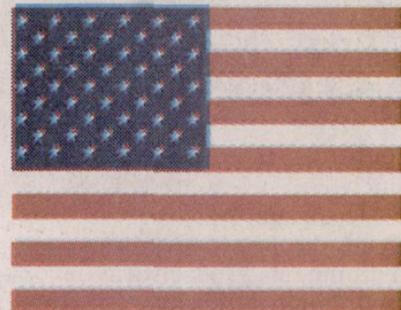
News Wrap 2AA
From the Editor 5AA
In the Loop 5AA
Tell It Like It Is 5AA

Love goes
the distance
/4AA



Unemployed executive?
Organization offers help / 2AA

Theta Charity Antiques
Sale set / 6AA



Supporting our troops

H GREATER HOUSTON WEEKLY

Explore the feeling of weightlessness



Students participate in the Reduced Gravity Student Flight Opportunities program and conduct an experiment under microgravity conditions while aboard the Vomit Comet. *Photo courtesy of NASA.*

By KELLI KOSTUE
HCN Reporter

Can you imagine that people actually compete for the chance to go for a ride on NASA's "Vomit Comet?" The name alone invokes a feeling of queasiness in most who hear it.

Despite the name and reputation the Vomit Comet has to make people toss their cookies, some college students are willing to take their chances. The Reduced Gravity Student Flight Opportunities was established in 1996 to give college students a chance to experience things most people never dream of doing.

Undergraduate students lucky enough to participate in the program have an amazing experience. The plane, a KC-135A, flies over the Gulf of Mexico at 36 thousand feet and flies a series of parabolas which creates several 30 to 45-second periods of microgravity, leaving all passengers essentially weightless during these dives.

Many passengers find it impossible to keep their

COMET, 4AA

GREATER HOUSTON WEEKLY
WED. 8-27-03

COMET

Continued from page 1AA

lunch down as the modified Boeing 707 twists and turns; hence the name Vomit Comet.

Donn Sickorez, university affairs officer at NASA, said students interested in taking a trip aboard the Vomit Comet create experiments to run in microgravity conditions. Once all experiments have been submitted, NASA scientists and engineers review the experiments and invite the best and most feasible experiments. These teams then run their experiments as the plane completes 45 parabolas in a trip that takes two to three hours.

The program runs flights six weeks each year. Seventy teams, each with four members, fly on the Vomit Comet.

All current and former astronauts have also ridden aboard the Vomit Comet. For them, it is a "fam flight," which helps the astronauts to familiarize themselves with and experience



Students explore a gravity-free environment during an experiment for one of NASA's educational programs. *Photo courtesy of NASA*

microgravity.

Teams have participated from forty-four of the fifty states. Purdue has had more teams participate than any other school in the United States. Nearby Texas A&M University is in the top 10 of most teams participating in the program.

For more information about the Reduced Gravity Student Flight Opportunities program, please call Donn Sickorez at 281-483-4724 or visit NASA's Web site at www.nasa.gov



NASA's Vomit Comet: A modified Boeing 707 is used to introduce students and astronauts to microgravity conditions.

Released March 7, 2003

STUDENTS TO CONDUCT EXPERIMENT IN ZERO GRAVITY AS PART OF NASA PROGRAM

By Christopher Mapp

HATTIESBURG -- When Emilie Laiche was asked to fill the final spot on a University of Southern Mississippi undergraduate team conducting biology research aboard NASA's KC-135 aircraft -- known affectionately as "The Vomit Comet" -- her answer was immediate.

"This is just something you don't pass up," Laiche said, her eyes twinkling in anticipation of the flight that will simulate zero gravity for about 20 seconds at a time as it conducts nearly 40 parabolic arcs over the Gulf of Mexico.

The junior biology major from New Orleans will join a team of five other students from Southern Miss that will travel to Johnson Space Center in Houston March 13-22 to take part in NASA's 2003 Reduced Gravity Student Flight Opportunities Program (RGSFOP).

Consisting of two groups, a flight crew and a ground crew, the team will try to resolve some unanswered issues that evolved from an experiment USM undergraduates performed last year in the same program.

During the 2002 flight, Southern Miss biology students investigated altered lighting conditions and the effect of altered gravity conditions -- both microgravity (zero g-forces) and hypergravity (1.8 g-forces) -- on jellyfish.

The team's faculty adviser, biology professor Patricia Biesiot, said that during last year's experiment, a comb jelly and a jellyfish medusa were both affected by the altered gravity conditions.

"Our hypothesis is that comb jellies are able to sense the changes in gravity and the changes in lighting and that they swim in response to these changes," said graduate student Michelle Melnick of Memphis, Tenn.

For posterity's sake, the team will videotape the entire experiment, allowing them to review the results back at Johnson Space Center. But that's not all videotaping will allow them to do, said team member Jennifer Anderson, a graduate student in marine biology.

"We designed the apparatus to be self-contained so we could have fun," said Anderson, who will not participate in the flight itself but will act as part of the two-person ground crew. Although she won't be going up this year, Anderson, one of three students returning from last year's team, said that experiencing weightlessness is like nothing imaginable.

"Really, there are no words to describe it," she said. "Not floating in water, nothing."

Said team leader Michael Dodge, who also participated last year, "It's pretty intense."

While the flight itself might be short -- about one hour -- preparation for the trip is not. To ensure maximum safety, NASA requires all students to undergo an eight-hour training course. About 69 different teams from around the nation that are participating in the flight program learn about the vestibular system and gas exchanges -- in other words, the mechanics that earned the KC-135 the moniker, "Vomit Comet."

"It's not the microgravity that makes you sick," said graduate student Brian Ortman, also member of last year's team. "It's the alternating G-forces that do it." To help team members combat the queasy effects of the flight, NASA administers a drug to all participants, called Scopex, a mixture of depressants and stimulants.

Dodge, a junior from Bay St. Louis, said: "The depressant is so you won't get sick and the stimulant is so you won't fall asleep. Last year, our flight was what they call a 'no-kill flight,' which means no one got sick. We were the fifth flight in a row where nobody got sick."

Anderson said that getting sick is the only real hazard. Thanks to NASA's stringent safety precautions and mandatory training courses, Anderson said she felt "safer on the plane than I did on the ground."

Hazards or no hazards, Daniel Pocase said he can't wait to experience weightlessness for the first time. "How many people get to fly with NASA?" said Pocase, a junior biology major from Mobile, Ala.

Smith engineering students conduct research at NASA

For many students, spring break was an opportunity to soak up some sun or catch up on sleep and laundry. But a team of Smith College engineering students submitted themselves to the initial thrill — and nausea — of microgravity, all in the service of improving space flight.

Seven students — four fliers and three ground-crew members — spent last month as participants in the Reduced Gravity Student Flight Opportunities Program at NASA in Houston. The so-called Zero-G program gave students the opportunity to conduct research in a near-weightless environment.

Flights on NASA's KC-135 aircraft follow a parabolic arc, during which the students experienced simulated weightlessness due to the momentary minimization of gravity.

In sending students to Houston, Smith joined more than 50 other colleges and universities in the country with students flying in the program this year. The schools include engineering powerhouses such as CalTech, Purdue, Texas A & M and the University of Michigan. This year, Smith was the only women's college to participate.

During the flights, the Smith team collected data based on an experiment they proposed to NASA officials last fall. Their project, titled "Human Performance: Changes in Spatial Ori-

entation and Vestibular Behavior as a Result of Changes in Gravity," examined why and how our sense of balance is compromised in weightless environments.

Those are not academic questions, noted junior Susan Strom of Encino, Calif., who served as team leader and was one of the first Smith students to fly.

"Microgravity flights are one of the worst places for motion sickness," she said, which may explain why the plane on which she and her teammates flew was dubbed by many as the "vomit comet."

Among their final pre-flight preparations, the students were required to compile a Test Equipment Data Package — basically, an inventory of all test machinery they plan to take on board. Junior Caitlyn Shea of Northampton, who served as one of the team's alternate fliers and a member of the ground crew, said the process of assembling equipment was one of the most satisfying aspects of the experience because it underscored the fact that the project was entirely student-run.

"I really like how we've taken this whole project from start to finish, from assembling the application to acquiring data to doing background research," she said. "The research experience has been invaluable."

The impetus to apply for the Zero-G program came from a



PHOTOS COURTESY SMITH COLLEGE

Smith College engineering major Susan Strom plays around during a section of the flight on NASA's KC-135 aircraft that simulated the gravity on Mars. Smith engineering major Kerri Rossmeier, left, sits in the cockpit awaiting takeoff.

talk given last year at Smith by NASA astronaut Bonnie Dunbar. Following Dunbar's visit, Domenico Grasso, a professor of engineering and the director of the Picker Program in Engineering, suggested students draft a proposal. Corinna Lathan, president of AnthroTronix, a Maryland engineering firm that seeks to promote interaction between people and technology, advised the students in writing their 74-page proposal. Lathan is a visit-

ing professor in Smith's engineering department this semester.

After returning from Houston, the students reported their findings, which they will seek to publish. They will speak at Smith and at local schools, and hope to design lesson plans about microgravity for elementary and secondary school students.

In addition to Strom and Shea, team members included Sarah Jaffray, a junior from Blue Hill,

Maine (ground crew); Christine Johnson, a junior from New York City (ground crew); Jessica McCartney, a sophomore from Idaho Falls, Idaho (flier); Kerri Rossmeier, a junior from Bozeman, Mont. (flier); and Mimi Zhang, a sophomore from Fremont, Calif. (flier).

For more information on the Reduced Gravity Student Flight Opportunities Program, go to microgravityuniversity.jsc.nasa.gov.

Career Training that puts YOU in Demand

EXCEL WITH CONFIDENCE!

Boston



'Sickening' success at NASA

Smith engineers test microgravity, cope with motion

By CHERYL B. WILSON
Staff Writer

NORTHAMPTON — Eight Smith College students spent their spring break experiencing microgravity — and motion sickness — as part of their engineering studies in a NASA airplane flying out of Houston.

Beginning last fall, the students designed a project to test how a weightless environment affects the human sense of balance. They called their project VERTIG-0, for Vestibular Research Team in Gravity Zero.

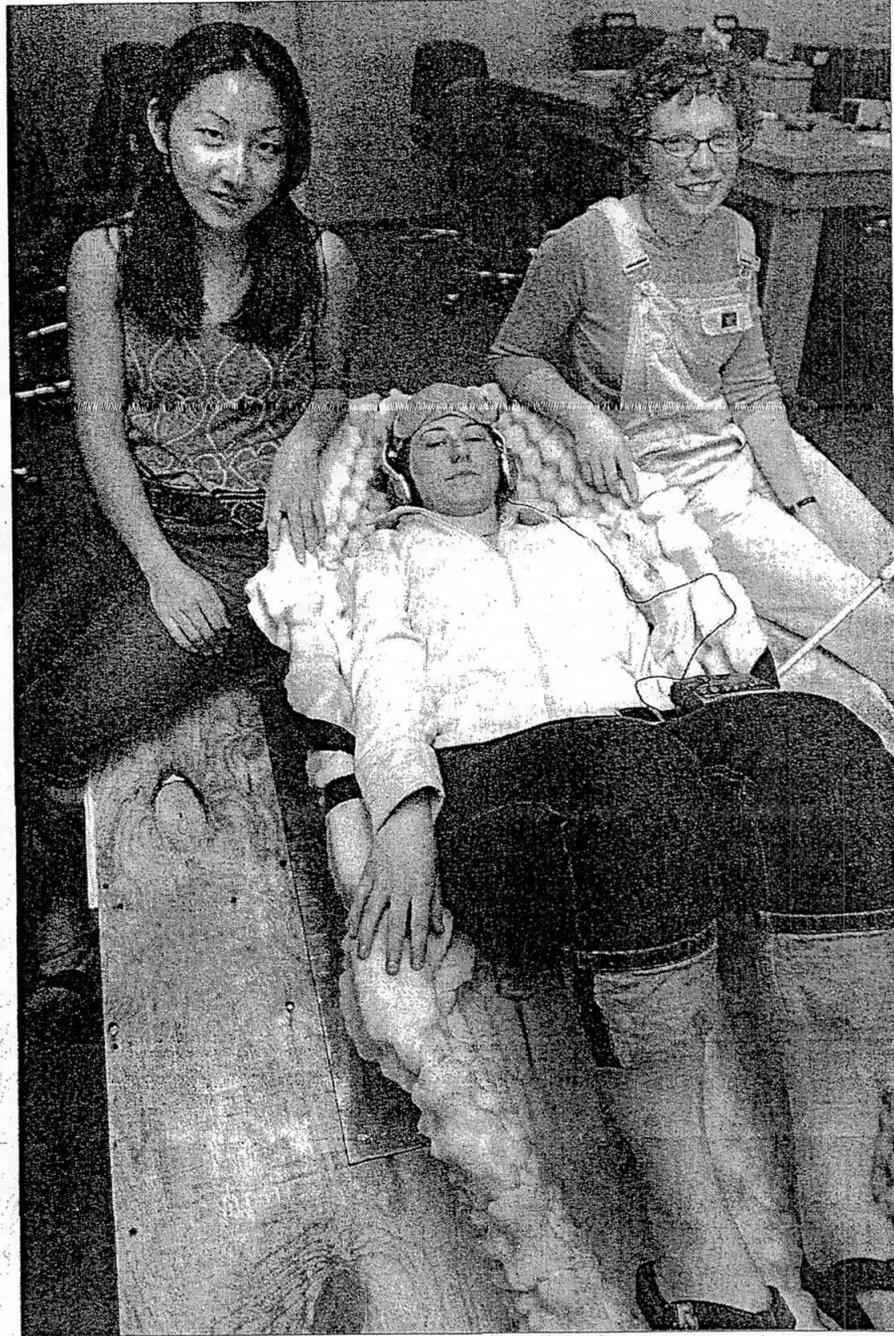
"NASA was excited we had brought down a human subject," said Kerri Rossmeir, a junior from Bozeman, Mont. "Only three groups had biological projects. We were outside the norm."

Engineering students from 50 colleges and universities nationwide participated in the Reduced Gravity Student Flight Opportunities Program at the National Aeronautics and Space Administration's Johnson Space Center in March. Smith was the only women's college participating.

In a 74-page proposal to NASA, the Smith students explained their experiment. They planned to test how the otolith organs of the inner ear, part of the body's neurovestibular system, are affected at normal 1.0-g on earth, 1.8-g and 0-g or weightlessness in a special NASA plane flying in arcs or parabolas over the Gulf of Mexico.

They built an apparatus to hold one of them motionless while another student slowly rotated the basket. Greg Young, head of the Clark Science Center machine shop, helped the students fabricate the device. "It's like a baby we have produced," said Caitlyn Shea, a junior from Northampton.

The students were warned they might experience motion sickness from the constant shift from 1.8-gs to 0-gs in the Boeing 747, nicknamed the "vomit comet." But they were unprepared for just how sick they could get during the



CAROL LOLLIS

Smith College students, from left, Mimi Zhang, Susan Strom and Kerri Rossmeir demonstrate the contraption they built as part of their engineering studies for an experiment at the National Aeronautics and Space Administration Johnson Space Center. They tested how the human sense of balance is affected in a weightless environment.

Smith College's VERTIG-0 team will give a public presentation, including videos, about the NASA experience Wednesday at 4:15 p.m. in Seelye Room 106.

■ See SMITH/Back of section

House GOP targets Bulger's office

BOSTON (AP) — Republican lawmakers are jumping into the fight between Gov. Mitt Romney and Uni-

versity students failing to understand the importance of state colleges to lower-income residents.

versity more than his previously reported salary of \$309,000, as well as reports that the UMass has lagged behind other



and staff rally at the Statehouse t cuts.

IRAQ

r Baghdad return American some of them; nks says Iraqis are to return precious n museums.

VRANCE

gh School students nited Nations Friday.

NTER

ths, the mily Center has ent home at opal Church's ain Street.

PA



tist provides to her office nts relax.

TM

Meeting voters cles on the first eeting Monday.

is, symptoms of the deadly virus ed severe wide in an effort

ETAINED

Meeting narrowly to loosen zoning.

Smith students team up with NASA

■ Continued from Page A1

two-hour flight.

Jessica McCartney, a sophomore from Idaho Falls, was incapacitated and Rossmeir was also very ill, though she managed to complete her part of the experiment. In an interview before the group left for Houston, McCartney was determined to pursue a career at NASA as an aerospace designer. She said she hasn't wavered from her goal.

Team leader Susan Strom, a junior from Encino, Calif., and Mimi Zhang, a sophomore from Fremont, Calif., made up the second Smith team to fly. The anti-motion sickness medicine NASA officials insisted they take interfered with the results of their experiment, they said. "It gave us strongly different outcomes," Strom said.

Blindfolded and strapped into their apparatus on earth, subjects lying in a supine position find it difficult to judge how far they have rotated. It is easier to judge during rotation when standing upright. The students' hypothesis was that in microgravity or near weightlessness, they could not judge the distance either lying down or standing up. Spatial perception in microgravity was expected to be poor.

"When we were in the basket (in the airplane) we didn't think we had moved at all," Strom said.

Before McCartney succumbed to motion sickness, her results were excellent, Strom said. "She overestimated in microgravity and underestimated in 1.8-gs."

Dear diary ...

Smith College engineering students who spent March 13 to 22 at the National Aeronautics and Space Administration in Texas kept a diary of their experiences.

Here are some excerpts:

"We seriously underestimate how our bodies compensate for gravity every day. During the first parabola, I stood up as if I would normally on earth or 1-g. The force that I exerted in microgravity shot me straight to the ceiling where I proceeded to bump my head!"

— Caitlyn Shea, junior, Northampton

"I will never forget the incredible, yet indescribable feeling of my first 0-g parabola ... It is a rush that only a handful of people on this planet get to experience; a thrill that even the world's greatest roller coasters cannot provide."

— Mimi Zhang, sophomore, Fremont, Calif.



"I can't even put into words how amazing Houston has been so far, and today's flight? Perfect. I have to do this next year! I had a perma-smile the whole time; oh it all could not be better."

— Susan Strom, junior, Encino, Calif.

"We had a lot of interest in our experiment from other schools," Rossmeir reported.

They all said it was wonderful meeting engineering students from bigger schools like Purdue and the University of Michigan. The Smith students said they were proud of their Picker Engineering Program,

just in its third year.

It is the only engineering program in the country at a women's college. "As a group we didn't feel intimidated by the larger schools or larger engineering programs," Rossmeir said. In fact, they felt better prepared than some other students. "I felt we were really

excited and knowledgeable about our research and it showed," Strom said.

The students plan to submit another proposal to NASA for next year. "I would love to repeat this experiment again and not medicate," Strom said. "Perhaps we could study the effects of medication in microgravity."

Artist's son sues stepmother, drug company

■ Continued from Page A1

Peggy Gillespie's lawyer, David Kaplan of Amherst, said the "maliciously filed" allegations are "gross and painfully untrue." He believes Vincent Gillespie doesn't have any standing to bring the action.

Kaplan also said in a message left today on a Gazette answering machine that the suit was filed "for an ulterior purpose by this extremely litigious and

Beyond that she declined comment, referring questions to Kaplan.

Vincent Gillespie's lawsuit outlines a history of his father's relationship with Peggy Gillespie, which he says began in 1978. A year later Gregory Gillespie divorced his wife, Fran, and, in 1985, married Peggy.

"Soon after they were married Peggy encouraged Greg to bring a third partner, another woman, into the bed with them. Greg

which in turn inflicted emotional distress on him, and seeks compensation for subsequent loss of his father-son relationship.

The suit seeks a financial penalty "the Court shall deem just and proper with interest and costs."

In a memorial service held in May 2000, Peggy Gillespie said her husband had been open about his battle with depression. She said at the time that he had been worried about difficulties in his life and started

Vacation saved

■ Continued from Page A1

Patricia Vinchesi on her cell phone, who then phoned her assistant Lisa Saporowski, who got in touch with Kathy Ingram from the town clerk's office.

Even though it was Saturday of Easter weekend, Ingram agreed to meet Resnick and Constant at Town Hall, where they opened the building, unlocked the safe, made a copy of the required birth certificate and stamped it with the town seal.

Thursday
May 1

NEW ENGLAND
TECHNOLOGY
FAST 50

ATTENTION New England Fast Growing
Technology Companies!

MASS
High Tech
THE JOURNAL OF NEW ENGLAND TECHNOLOGY

Qualify for a free print subscription [Got>>](#)
Register now! FREE daily Tech Flash e-mail! [Got>>](#)

[HOME](#) [SUBSCRIPTIONS](#) [ADVERTISING](#) [ARCHIVE SEARCH](#) [CONTACT US](#)

The Journal of New England Technology

Purchase the
New England
Directory of High
Tech Companies

Start searching the
Directory of High
Tech Companies

List your company in the
Directory of High
Tech Companies

OUR CURRENT ISSUE

- [Software](#)
- [Movers & Innovators](#)
- [Biotech](#)
- [Med Tech](#)
- [Hardware](#)
- [Internet](#)
- [Networking](#)
- [Security](#)
- [Personnel](#)
- [Finance](#)
- [Defense](#)
- [Education](#)
- [Energy](#)
- [Community](#)
- [Envirotech](#)



Smith College participating in the Reduced Gravity Student Flight Opportunities Program at NASA's Johnson Space Center in Houston are, back row from left, Susan Strom, Mimi Zhang, Christine Johnson and Caitlyn Shea; front row from left, Kerri Rossmeier, Jessica McCartney and Sarah Jaffray.

NASA program has Smith students walking on air

03/24/2003 07:34 AM

By Claire Matheson

While many of their classmates are spending spring break lounging poolside, schussing down snow-covered mountains or relaxing at home, seven undergraduate engineering students from **Smith** College in Northampton are spending their vacation aboard the "Vomit Comet."

The students are in Houston to participate in the Reduced Gravity Student Flight Opportunities Program sponsored by **NASA's** Johnson Space Center.

During their week at **NASA**, the students will have two opportunities to fly aboard a specially modified **NASA** KC-135 aircraft over the Gulf of Mexico. Each flight lasts about 60 to 80 minutes.

The plane is designed to perform a series of parabolic maneuvers, which result in periods of 20 to 25 seconds of simulated weightlessness. It is the same plane used to simulate weightlessness in space in the film "Apollo 13."

Due to the numerous transitions in and out of weightlessness, most first-

THE WEB'S GLOSSARY

[Education & Training](#)

- [DIALOGUE](#)
- [CALENDAR](#)
- [MOVERS](#)
- [PERSONNEL FILE](#)
- [TECH KNOWLEDGE](#)
- [COLUMNS](#)

OTHER TECHNOLOGY NEWS

[American City Business Journals](#)
(news from 41 Business

publications around the country)

OTHER USEFUL LINKS

SURVEYS

COMMUNITY LINKS

EDITORIAL CALENDAR

TOPS FINDS

All Stars 2002

TechCitizenship

SUPPLEMENTS

time passengers experience motion sickness to some degree. Hence, the "Vomit Comet."

The microgravity program gives undergraduate students from around the country the opportunity to propose, design, fabricate, fly and evaluate a reduced gravity experiment of their choice over the course of a school year. Participants engage in scientific research, hands-on experimental design, test operations and educational/public outreach activities.

The trip to Houston began last fall when **NASA** astronaut Bonnie Dunbar gave a talk at the all-women's college. Following her visit, engineering professor and director of the Picker Program in Engineering, Domenico Grasso, encouraged students to draft a proposal.

Students drafted a 74-page proposal with the help of Corinna Lathan, president of AnthroTronix, a Maryland engineering firm.

The group, calling themselves Vertig-O, submitted "Human Performance: Changes in Spatial Orientation and Vestibular Behavior as a Result of Changes in Gravity" to **NASA**.

Vertig-O was one of 69 teams selected and the only women's college chosen. Vertig-O comprises four fliers and three ground crew members.

Vertig-O will examine why and how a person's sense of balance is affected in a weightless environment. The students will conduct tests in normal and microgravity environments and examine the difference in a test subject's perceived angle of rotation versus the actual angle of rotation.

Researching and preparing the proposal and compiling a test equipment data package were time-consuming and often difficult. However, the group found it educational.

Sophomore Mimi Zhang said, "The trip to Houston is the culmination of our hard work. My hopes have been fulfilled just by doing the proposal."

Zhang is one of Vertig-O's four fliers.

"Spending a week at Johnson Space Center will be a childhood dream come true," said junior Kerri Rossmeier, in a statement on Vertig-O's Web page.

Sophomore Jessica McCartney added, "This is what I want to do with the rest of my life. I have the schematic for a new deep space propulsion engine plastered to my ceiling where most people would put a poster of their favorite celebrity."

Both Rossmeier and McCartney are team fliers.

"It's been such a valuable and amazing experience," said team leader and flier Susan Strom, a junior.

After returning from Houston, Vertig-O will produce a report of their findings, which they hope to publish.

Claire Matheson is a graduate student in journalism at Boston University. She is serving an internship at Mass High Tech.

EMAIL ARTICLE TO A FRIEND.

Students fly the "vomit-comet"

Jessie Rubin
Staff Writer

They wrote a 100-page proposal. They submitted it to NASA a year ago. On Dec. 11, 2002, they found out they had been accepted to a program along with students from 50 other colleges nationwide.

From March 13-22, seven Smith engineering students will be conducting research in Houston, TX, under the guidance of NASA's Reduced Gravity Student Flight Opportunities Program. The program gives students the opportunity to conduct space travel research in a near weightless environment. While they fly in one of NASA's KC-135a aircrafts, the simulation of weightlessness will be produced. Juniors Susan Strom, Caitlyn Shea, Sarah Jaffray, Christine Johnson, Mimi Zhang, Kerri Rossmeier and sophomore Jessica McCartney are the seven women who make up the Vertig-0 team. Their research proposal is entitled "Human Performance: Changes in Spatial Orientation and Vestibular Behavior as a Result of Changes in Gravity."

"We are going to test the neuro-vestibular system, which is the part of your inner ear that maintains your sense of balance and helps with your sense of spatial perception," Strom said. "In microgravity, the vestibular system should not behave as it does on earth because of the absence of gravity."

The group has been preparing for their coming trip for the last six months and is now ready for their research on the KC-135a aircraft, also known as the "vomit comet." According to Rossmeier, flights on the aircraft will induce other symptoms as well, including a feeling of drunkenness. "They say that the people who get happy and giddy when they are drunk will get happy and giddy when they are deprived of oxygen," she said. "We will be video taped so that we can recognize our own signs of that."

Even before enduring the symptoms of the "vomit comet," Strom said that the group has already had an enriching educational experience. "I cannot even quantify the amount of things we have learned," she said.

Their work will not be over after their research in Houston. Once back at Smith, the team will organize their research for publication. They said that the process of publication would take about another year of work.

Students fly the "vomit-comet"
Jessie Rubin
Staff Writer
New

Citizens for students at joined with s who walked on Wednesday in war in Iraq. Students for the walkouts wide day of walkouts ties across

In an Smith of that the "the s State make

ques are an enough. Because continue.

Iraqi popul 15, and the live and be Because inte always walk out fear of deportation. is a sacrifice, are willing to American and be lost in this co for the sake of p

Protestors c Neilson Library tured a perform Cheerleaders, v about President cy, U.S. dependence on

their general opposition to the war. Maria Velazquez '04 read a poem titled "10 Reasons to Bomb Iraq." Another student performed a piece of slam poetry, and a group of students sold small bags of rice which

Students fly the "vomit-comet"



Repar

The Student Press of Smith College | Vol. 52 No. 17

SOPHIAN

March 13, 2003

SLAC's Fashion World fashic
Ani's her n relea

and then traveled to UMass Higgs Mall to join in a Five College protest that then marched to the

See WALK OUT Page 3



Rec
ar
Sar
Sta
last sen
n party
ess of
er fire f
en Anna
A presid
ate me
uary w
open pe
semeste
r hands.
the sc
ed when
open pe
ester.
ident Ch
policy c
al life im
eannine
Resident
ting with
students
e. In an
to inform
ending p
it has bec
iation of
aged is n
last forw
am
o t
Hea
on. Tu
sachuset
rt (SJC)
in gay an
ed that
ection t
ed when
e licens
appeal
seven co
marriage
nty (Bo
ed.
he main
in this a
hether g
ive the
eterosex
ed conce
allowing fo
would lead to
of polygam
defined as
between a n
that Massac
does not p
marriage. A
of the court,
by religious
Catholic Ch

deprived of oxygen," she said. "We will be video taped so that we can recognize our own signs of that."

Even before enduring the symptoms of the "vomit comet," Strom said that the group has already had an enriching educational experience. "I cannot even quantify the amount of things we have learned," she said.

Their work will not be over after their research in Houston. Once back at Smith, the team will organize their research for publication. They said that the process of publication would take about another year of work.

But here at Smith their efforts will not be completely tied down to paperwork. Rossmeier said they also have plans for educational outreach programs in the area, including teaching at Northampton High School and Clark School. Strom said they would also hold a presentation for the Smith community. "One of NASA's objectives with this program is to bring what we learn through this experience to a larger community," Strom said.

In terms of expectations for the trip ahead, Johnson said that she hopes everything goes according to plan. "It's an exercise in designing an experiment," she said. "If we get what we were expecting then we'll know that we designed

for the sake of
Protestors
Neilson Library
tured a perform
Cheerleaders, w
about President
cy, U.S. dependence on
their general opposition to the war.
Maria Velazquez '04 read a poem
titled "10 Reasons to Bomb Iraq."
Another student performed a piece
of slam poetry, and a group of stu-
dents sold small bags of rice which

SLAC
Fashio
World
fashio
Ani's
her m
releas

and then traveled to UMass' Hgis
Mall to join in a Five College
protest that then marched to the

See WALK OUT Page 3

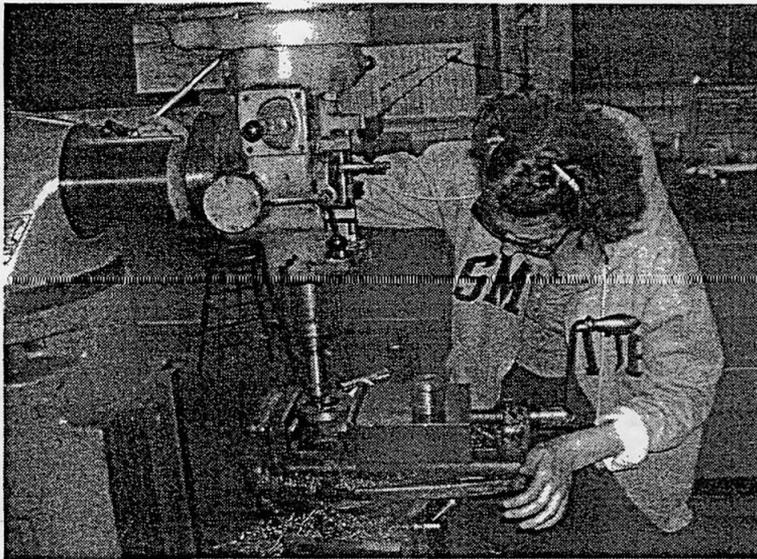


PHOTO COURTESY OF SUSAN STROM

endent works on a project in preparation for upcoming trip.

ed.
he main ideas that
in this argument at
hether gay and lesb
rive the same mar
eterosexual couple
ed concerns such
allowing for same-se
would lead to a cry for
of polygamy, that n
defined as somethi
between a man and v
that Massachusetts' c
does not provide for
marriage. Amici curia
of the court, briefs hav
by religious groups, in
Catholic Church, fun
Protestants and the
Jewish sect, who are
the legalization of
unions, as well as to s
and local bar associat
filed briefs in favor of
motion.

In response to this
at the SJC, state law
planning a resurre
Massachusetts' De
Marriage Act, a staten
that marriage can oc
between a man and
The previous act died
on December 31 of
Massachusetts House
Thomas Finneran sai
voted and would conti
to restrict marriage to o



VISITING NASA/B4

ORANGE

Lawmaker says cuts hurt GCC, Orange court

Greenfield Community College and Orange District Court are unjustly victims in Gov. W. Mitt Romney's proposed fiscal 2004 state budget, said state Rep. Christopher J. Donelan, D-Orange.

"I will not support a budget that targets two vital institutions in Franklin County," he said.

Donelan said the decisions to do away with the Orange court and combine GCC with Holyoke Community College are based on numbers of people served by the court and the college.

"We are a rural area. We cannot compete with Boston or Worcester in a numbers game," he said.

He said he will try to change Romney's mind.

GREENFIELD

New director named

LOCAL

Union-News

TUESDAY, MARCH 11, 2003

Charity or scam? Judge to de

By FRED CONTRADA

Staff writer

NORTHAMPTON – Jeffrey and Dawn Scott say that the events of Sept. 11, 2001, inspired them to collect donations for the victims of the World Trade Center bombings.

The Massachusetts Attorney

General's Office says the Southamptton couple tried to profit from the tragedy. Now it is up to a Hampshire Superior Court judge to decide whether or not the Scotts were running a scam.

According to John A. Cvejnovich, the lawyer representing the Scotts, the case against Jeffrey Scott, 40, and Dawn Scott, 39, boils down to one question.

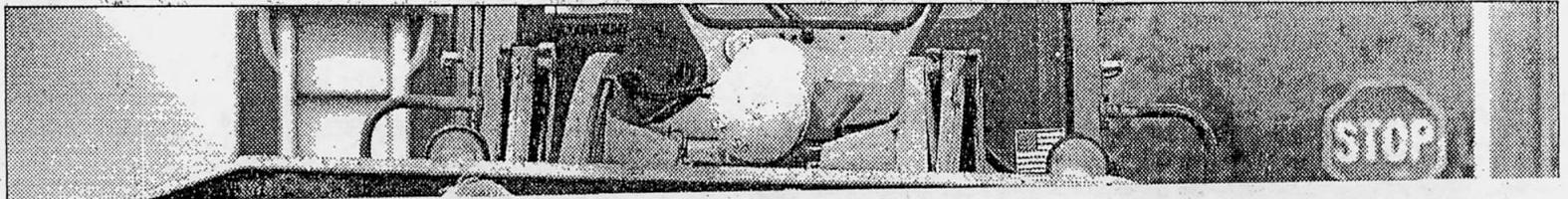
"Were the Scotts doing what they said they were doing: Raising money for the victims of 9/11?" he said in his closing argument yesterday. "The commonwealth says the Scotts were running a scam. Everything falls one way or the other."

As Cvejnovich portrayed it, the case against his clients proves the saying, "No good deed goes un-

punished." The Scotts, he said, were motivated by charity, not personal gain, when they placed collection boxes at a dozen businesses seeking donations in exchange for American flag stickers they had printed up at their own expense.

Assistant Attorney General William P. O'Neill maintained the case is about the breach of the

POTHOLE PACK



NASA ride a new high for students

The KC-135A is the same training vehicle that NASA uses to prepare astronauts for outer space.

By **PATRICK JOHNSON**

Staff writer

NORTHAMPTON — While many of their peers are spending spring break in places such as Cancun or Nassau this week, a group of Smith College students are planning to spend it with NASA.

Seven students in the Picker Engineering Program at Smith are heading to Houston tomorrow to take part in the space agency's Reduced Gravity Student Flight Opportunities Program at the Johnson Space Center.

Smith is one of 69 schools selected to participate in the program.

For the Smith program, founded in 1999 as the first engineering program at a women's college, the project presents a rare and exciting opportunity, say participants.

Karri Rossmeier, a third-year student from Bozeman, Mont., and one of the original Smith engineering majors, said the flight is easily number one on the list of neat projects offered in the new major.

"We never thought we'd get to do something cool like this," she said.

"I'm getting a lot of positive support from my friends and acquaintances at Smith," said engineering



The Smith College students going to NASA are, at back from left, juniors Christine Johnson from New York City, Caitlyn Shea from Northampton, Karri Rossmeier from Bozeman, Mont., Sarah Jaffrey from Blue Hill, Maine, sophomore Jessica McCartney from Idaho Falls, Idaho, and junior Susan Strom from Los Angeles. At front left is sophomore Mimi Zhang from Fremont, Calif., and next to her is visiting Smith professor of engineering Corinna Lathan.

Los Angeles.

The idea for participating came last year after astronaut Bonnie Dunbar spoke at Smith, Strom said.

She said engineering program's director, Domenico Grasso, encouraged students to apply for it.

As part of the reduced gravity program, students will hitch a ride on NASA's KC-135 aircraft to perform research on the effect of near-weightlessness on the inner ear. They are interested in seeing how balance and orientation are

affected in zero gravity.

The KC-135A is the same training vehicle that NASA uses to prepare astronauts for outer space.

It is better known by people in and out of NASA as "the Vomit Comet," a nickname that apparently does not go over well in the tradition-steeped college.

Even those in the project shy away from the nickname.

"I try to keep it to the KC-135A," said Strom.

Rossmeier said she prefers NASA's alternative, albeit less popu-

lar, nickname: "The Flight of Wonder."

"I just stuck to NASA," said Christine Johnson, a junior from New York City.

The plane flies a parabolic course at high altitudes, meaning it goes up and then down several times in a row, producing a condition known as microgravity and sometimes air sickness.

At points where the aircraft begins a downward arc, passengers experience periods of near weightlessness for as much as 30 seconds

at a time.

When the aircraft begins its upward turn, the force of gravity increases.

"I'm told you get a sense of being really light, then really heavy," said Strom.

Rossmeier said she could not be more excited about the flight, although that feeling is not shared by everyone in her family.

"My mom is terrified," she said.

Patrick Johnson can be reached at pjohnson@union-news.com

5730

9-28

AUG 08 2003

The Honorable Barbara A. Mikulski
United States Senate
Suite 709
Hart Senate Office Building
Washington, DC 20510

Dear Senator Mikulski:

I thought you should know about the outstanding work being accomplished by the office of the Student Reduced Gravity Program at the Johnson Space Center in Houston, Texas. A group of five Naval Academy midshipmen, three men and two women, carried out an experiment on the KC-135 airplane to simulate the necessary weightless environment in which they evaluated a spacecraft deployment mechanism they designed. In the end, this experiment provided an unparalleled educational opportunity that was a thrilling experience of a lifetime. Enclosure (1) is a copy of the letter sent by these midshipmen to the marvelous folks who supported this very enriching endeavor.

This program provides a unique opportunity for students to put into practice what they have learned in the classroom and in the laboratory. It also excites their peers and juniors who are inspired by their enthusiasm for research. In addition to creating a web site, the midshipmen participated in an outreach program to local schools. This is an important tool to help us attract young students into science and engineering by exposing them to the wonders of space research through discussions with undergraduate students close to their age.

As you may be aware, the students must formulate a proposal, submit it to NASA, and have it favorably evaluated in a very selective competition for the limited number of flight opportunities. If selected, they must develop the instrumentation and test procedures to carry out the experiment. As part of their outreach program, our students spoke at two local elementary schools, at a program in Baltimore for underprivileged high school students, and at a meeting of engineering students at the Naval Academy.

The NASA Student Reduced Gravity Flight program provided an unparalleled, unique and rewarding service to our students. Thank you for your continued support of NASA educational outreach programs.

Sincerely,

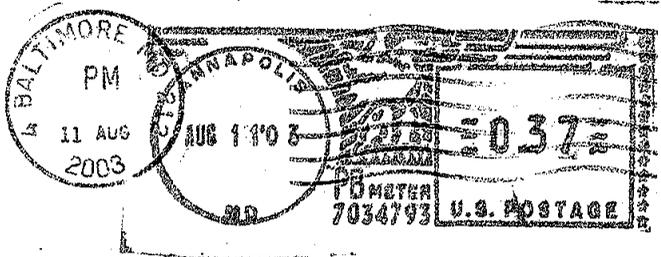
RODNEY P. REMPT
Vice Admiral, U.S. Navy
Superintendent

Enclosure: Letter to NASA Reduced Gravity Flight Program

→ Copy to: D. Sickorez, PhD, NASA-JSC

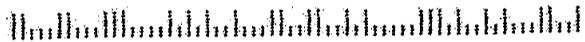
NAVY

000



DONN G SICKOREZ PHD
MAIL STOP AP2
UNIVERSITY AFFAIRS OFFICE
NASA JOHNSON SPACE CENTER
2101 NASA ROAD 1
HOUSTON TX 77058

77058+3891 13





DEPARTMENT OF THE NAVY

UNITED STATES NAVAL ACADEMY
121 BLAKE ROAD
ANNAPOLIS MARYLAND 21402-5000

02 MAY 03

From: R.G. Baumez, MIDN 1/C, USN
T.G. Kolwicz, MIDN 1/C, USN
M.R. Krueger, MIDN 1/C, USN
A.M. Madson, MIDN 1/C, USN
J.K. Van Zeyl, MIDN 1/C, USN

To: D. Sickorez, Affairs Officer, Co-director NASA Reduced Gravity Flight Program
Via: V. Pisacane, Professor, USNA Aerospace Department

Subj: Thank You

Sir,

On behalf of the United States Naval Academy and ourselves, we would like to thank you for your involvement in the Reduced Gravity Student Flight Program. This project was a wonderful opportunity for our professional and academic development. The expertise and professional standards of the personnel involved in this project are also commendable. Our department at USNA plans to apply for subsequent experiments for inclusion in this program in the years to come. As future Naval Officers, we hope to one-day return to work in the field of space research. Again, please accept our sincerest gratitude for your effort and that of those at Ellington Field for making this program a success.

Very respectfully,

R.G. Baumez
MIDN USN

T.G. Kolwicz
MIDN USN

M.R. Krueger
MIDN USN

A.M. Madson
MIDN USN

J.K. Van Zeyl
MIDN USN

Space Center
Roundup
LBT Space Center
June 2003
Vol 42
Number 6

STUDENTS FLY HIGH OVER Spring Break

by Kim Hulsey

Some students may spend Spring Break partying at the beach, but for others, a high-flying good time takes on an entirely new meaning. More than 200 university students traded in a trip to the beach for a ride aboard the KC-135 aircraft this spring.

The Reduced Gravity Student Flight Opportunities Program, sponsored by Johnson Space Center, provides a unique experience for undergraduate students to propose, design, fabricate, fly and evaluate a reduced gravity experiment of their choice aboard the KC-135. Inside the aircraft, also known as the "Weightless Wonder," weightlessness is achieved by performing a series of parabolas, each of which gives passengers nearly 30 seconds of reduced gravity.

University Affairs Officer Donn Sickorez said that the program aims to motivate college students majoring in science, technology or engineering as well as to introduce these subjects to students who may not have considered them.

Each student team is made up of four undergraduate student flyers with an unlimited number of people providing support on the ground. The team must go through a rigorous application process to participate and finally fly their experiment in the weightless environment. As part of the application process, the students must submit a letter of intent and a proposal that outlines the technical specifications, safety evaluation, outreach plan and administrative requirements of the experiment. After the experiment is selected, it must pass a Test Readiness Review before being flown. Finally, after flying, the students are required to submit a final report of the project.

"It's one thing to design an experiment in the classroom, but it is completely different trying to operate it and have it produce valid data in a weightless environment," said Jackie Jaron, a junior in astronautical engineering at Purdue University. "This was one of my most rewarding experiences."

Jaron and her Purdue teammates flew an experiment to test the effects of weightlessness on nanophase materials, and they were just one of more than 70 teams that participated this year.

"Not counting any flights this year, we have flown 1,211 students from 103 different schools in 44 U.S. states," Sickorez said. "That's not bad for six years."

For more information on the program, contact Sickorez at donn.g.sickorez1@jsc.nasa.gov



PHOTOS CLOCKWISE FROM TOP
A University of Minnesota student smiles from the KC-135 cockpit.

jsc2003e26089 Photo by Bill Stafford

Students get some preflight safety training from Randell Woodard, Aerospace Physiology Technician.

jsc2003e24485 Photo by James Blair

A University of Texas student enjoys his free-floating time on the Weightless Wonder.

jsc2003e27714 Photo by Bill Stafford

Two Purdue University students demonstrate their weightless gymnastic skills.

jsc2003e27758 Photo by Crystal Schroeder

An Auburn University student shows off her new microgravity skills for John Yaniec, Lead Test Director for the KC-135.

jsc2003e28478 Photo by Bill Stafford

next generation of explorers

While serving as the Executive Vice President and member of the Board of Directors for space.com from 1999 - 2000, Ride became involved in EarthKAM, or Earth Knowledge Acquired by Middle school students. EarthKAM is a NASA education program that enables students, teachers and the public to learn about Earth by using the Internet to take pictures of the Earth with a camera mounted on the International Space Station.

The EarthKAM program targets middle school students, which can be a crucial age in the development of students' interests and future careers. According to the National Center for Education Statistics (NCES), middle school is the age when many girls begin losing interest in math and science. Ride is working to change that.

According to NCES statistics, an equal number of fourth-grade girls and boys are interested in math and science, but by eighth grade, half as many girls as boys are still interested in these areas. Imaginary Lines is designed to "sustain [girls'] natural interests during the critical years, when so many of them drift away," according to the program's Web site.

Ride will be celebrating the 20th Anniversary of her flight along with Educator Astronaut Barbara Morgan at the Sally Ride Super Festival, which is expected to attract more than 1,000 young girls and their families. The event will take place June 21 and 22 at Kennedy Space Center; and as part of the festival, participants can watch Ride be inducted into the Astronaut Hall of Fame.

"As time goes by I realize more and more what an honor it was to be chosen to be the first woman to fly on the Space Shuttle, and how important my flight was to young girls," Ride said.

Twenty years ago this month, Ride gave girls around the nation inspiration as *Challenger* carried her into the history books. Today, she continues this mission by reaching out to inspire the next generation of female explorers.



Closeup view of Sally Ride as she communicates with ground controllers onboard the Space Shuttle *Challenger* during STS-7.

507-31-1603

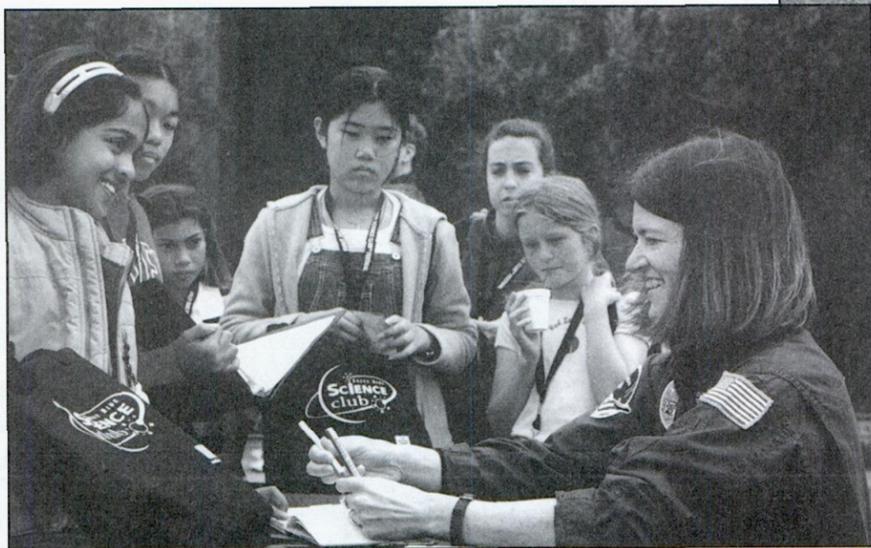


TOP
Sally Ride, Mission Specialist, communicates with ground controllers while floating in the aft flight deck of the Space Shuttle *Challenger* during the STS-7 mission (June 18-24, 1983).

507-02-014

ABOVE
Sally Ride stands behind one of the T-38 aircraft at Ellington Field, near the Johnson Space Center, where the fleet of NASA jet trainers is housed.

582-38423



Sally Ride meets with some young admirers at the Los Angeles Science Festival, held March 29 at the California Institute of Technology.

jsc2003e37440 Photo courtesy of Imaginary Lines, Inc.

This one the local
reporter wrote
with the info of
interviews I sent
her.

(it kind of continues
on back)



Soaring with Science

Man experiments with NASA, student program

By Linda Wondoloski
BCT staff writer

lwondoloski@phillyburbs.com

When Brian DiPaolo was 10 or 11, he built a crater of cinder blocks resembling the moon's surface in the back yard of his family's Moorestown home.

With support from his parents, Joe and Marilyn DiPaolo, the youngster engineered the project, guiding older brother Jonathan and younger brothers Andrew and Thomas in transforming the lot into a moonscape.

That childhood interest grew into a fascination with outer space, eventually propelling DiPaolo, now 23, into NASA's Reduced Gravity Student Flight Opportunities Program and, he hopes, toward his goal of entering the agency's space program.

DiPaolo is in his second year of the student program, which challenges undergraduates to propose, design, fabricate, fly and evaluate a reduced-gravity experiment of their choosing within a six-month time frame. The project involves scientific research, hands-on experimental design, testing and conducting educational outreach within their communities.

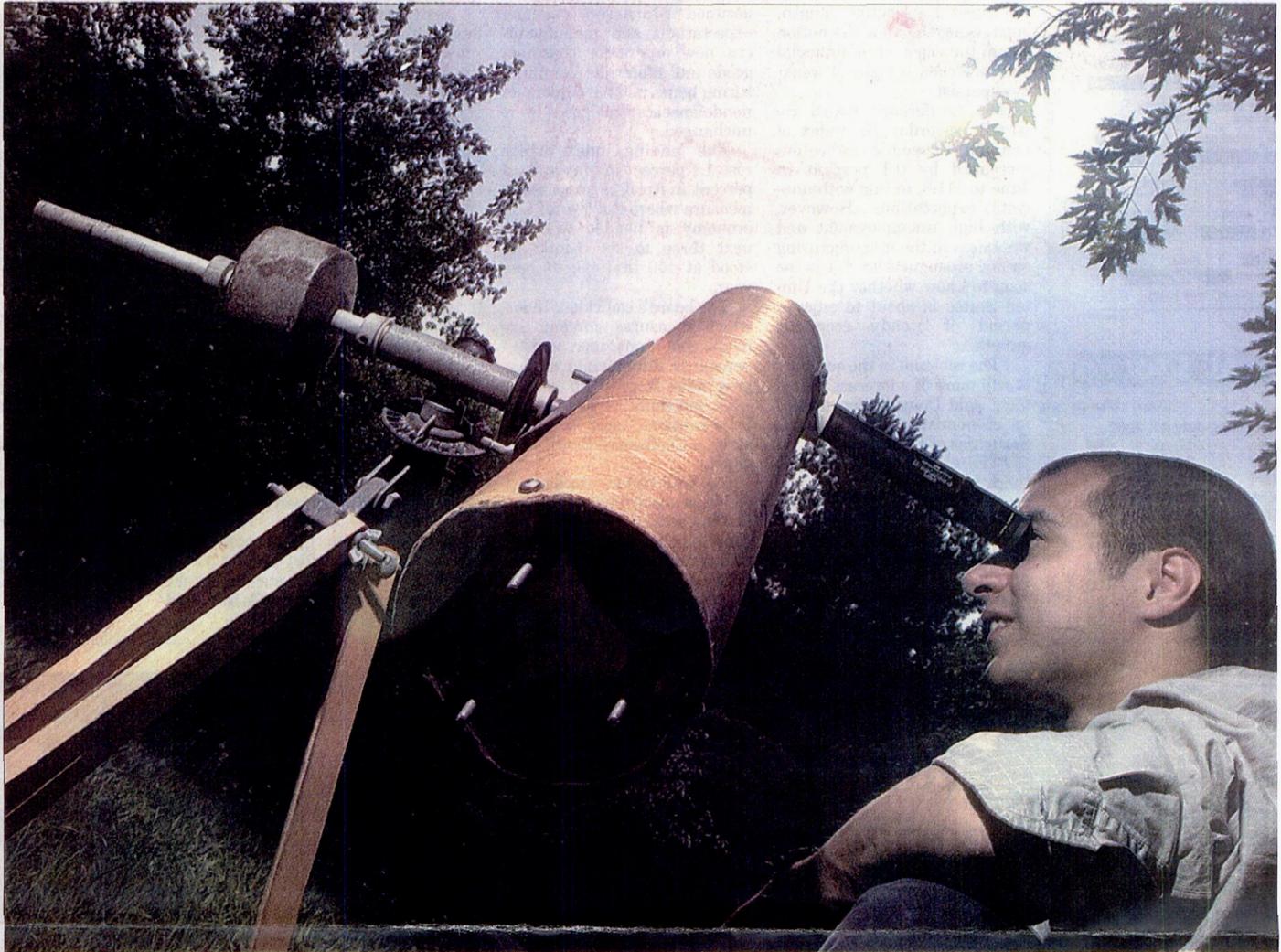
Earlier this month, DiPaolo and six others on his 10-member team from Drexel University in Philadelphia traveled to Houston to test their project aboard a KC-135A plane.

This year, 68 teams are taking part in the National Aeronautics and Space Administration's Reduced Gravity Student Flight Opportunities Program. Divided into six flight groups, the teams began descending on the Johnson Space Center and adjacent Ellington Field in Houston in March for each nine-day stay. The Drexel team was in Flight Group 5, from July 10 to July 19. Flight Group 6, set to visit Thursday through Aug. 2, winds up the schedule.

On two consecutive days, four members of each team — two each day — spend two to three hours testing their projects aboard a specially modified KC-135A turbojet transport as it climbs to

34,000 feet over the Gulf of Mexico, then drops at a 45-degree angle to 24,000 feet to produce weightless periods lasting 20 to 25 seconds. The plane makes 30 to 40 of these rises and falls — or parabolas — for project testing, then ends the flight with two more parabolas that simulate weightless conditions on the moon and on Mars. Testing is done in a section of the cargo bay measuring 60 feet long, 10 feet wide and 7 feet high.

Since the sensation of weightless-



BCT staff photos/MATT STAN

In the back yard of his family's home, DiPaolo uses a solar telescope to get a closer view of the sun. The Drexel University graduate with a lifelong love of space participated in NASA's Reduced Gravity Student Flight Program for the last two years.

ence nausea, said Miami Beach journalist Angela Swafford, who flew with Drexel team members this year and last.

NASA and the Johnson Space Center encourage teams to seek media coverage of the program. The journalists, who must be approved by the agency, accompany their respective teams throughout the Houston stay.

Dubbed Drexel SpaceDragons, DiPaolo's team's mission was to study variations in the physical and chemical makeup of electrospun polymer fibers and verify the feasibility of the electrospinning device in a reduced-gravity environment. Simply put, the

process involves applying high voltage — 18,000 volts — to the polymer to produce a film of woven fibers.

Webster's dictionary describes polymer as a chemical compound or mixture of compounds formed by a chemical reaction and consisting of repeating structural units. The word polymer is derived from the

Greek words poly, meaning many and merous, which refers to many parts. The word polymer refers to polymer substances as well as polymer molecules.



Photo/Courtesy NASA

Moorestown native Brian DiPaolo (right) stands with members of his flight crew — Garrett Gross (from left), Andrew Marx, flight journalist Angela Swafford and Jennifer Nolte — before embarking on a reduced gravity flight.

ject produces "can be applied to biomedical advancements as well as space operations."

Because the fibrous polymer has properties similar to human tissue, said DiPaolo, research is under way to determine whether it can be used to treat burn victims. The material also may prove useful in studying brain activity and in helping drugs target specific organs affected by diseases such as cancer, he said.

This year's project afforded DiPaolo an opportunity to combine his love of flying — he holds a private pilot's solo certification — and his education — he received undergraduate and

time at the Johnson Space Center, undergoing physiological training. The preparation includes a stay in a hypobaric chamber, which simulates loss of pressure in an airplane by reducing oxygen levels. Tips about dealing with weightlessness are part of the preparation, said Swafford.

The agency also takes the young researchers on tours of the space center, which usually turn up an astronaut or two, said DiPaolo. Last year astronaut Chris Ferguson, who graduated from Drexel, visited the Drexel team to view their project. This year astronaut and Drexel alumnus David Oliva, who is involved in the same type of polymer study as the Space Dragons, met with the students to discuss their project, said Swafford.

DiPaolo said the space center includes a visit to the three mission control centers: the now-closed mission management center, the one used the space shuttle, and one for the international space station.

Sitting in a full-scale mock-up of the space-shuttle cockpit and operating a computer simulator that allows students to "repair" the Hubble telescope, was "the coolest thing we did during last year's tour," said DiPaolo.

NASA's Lyndon B. Johnson Space Center has operated the Reduced Gravity Program, which provides weightless testing and training opportunities for researchers, since 1959.

In 1996, the agency started the Reduced Gravity Student Flight Opportunities Program with a prototype, then launched the program the following year. From 1996 through 2002, 1,211 students from 102 schools

begin doctoral studies in biomedical engineering at the University of Pennsylvania in Philadelphia in September.

Even after graduation, DiPaolo was spending his days at his alma mater preparing the polymer project for the trip to Houston. The student flight program requires participants to assemble and test their projects before shipping them to Ellington Field. "We build the project so it's as automated as possible, so it can kind of run itself," said DiPaolo.

His KC-135A flight last Wednesday was "great," said DiPaolo, and the project testing went well.

DiPaolo, who holds two degrees in biomedical engineering, met astronauts interested in his project while touring Johnson Space Center.

mical reaction and consisting of repeating structural units. The word polymer is derived from the

rs. Testing is the cargo bay ng, 10 feet wide

Greek words poly, meaning many and merous, which refers to many parts. The word polymer refers to polymer substances as well as polymer molecules.

on of weightless- h the human bal- tudents experi-

According to the Drexel team's proposal, the fibrous material their pro-

to determine whether it can be used to treat burn victims. The material also may prove useful in studying brain activity and in helping drugs target specific organs affected by diseases such as cancer, he said.

This year's project afforded DiPaolo an opportunity to combine his love of flying — he holds a private pilot's solo certification — and his education — he received undergraduate and graduate degrees in biomedical engineering from Drexel in June. He will

matter preparing the polymer project for the trip to Houston. The student flight program requires participants to assemble and test their projects before shipping them to Ellington Field. "We build the project so it's as automated as possible, so it can kind of run itself," said DiPaolo.

His KC-135A flight last Wednesday was "great," said DiPaolo, and the project testing went well.

Before the student researchers board the plane, they spend some

NASA's Lyndon B. Johnson Space Center has operated the Reduced Gravity Program, which provides weightless testing and training opportunities for researchers, since 1959.

In 1996, the agency started the Reduced Gravity Student Flight Opportunities Program with a prototype, then launched the program the following year. From 1996 through 2002, 1,211 students from 103 schools in 44 states have taken part in the program, said Swafford.

ate, aspiring doctor finds his true calling in theater

riedman
the BCT

be a doctor. But a year at Villanova Dario was showing an unwisely, and in a turnaround al guidance, they ay from medicine

ist wonderful," ve who switched owan University ajored in the field red, theater. in high school r theater," said the role of Gaston

in "Beauty and the Beast," the Tony-Award winning musical derived from the classic fairy tale. The show ends its national tour at the Academy of Music in Philadelphia (tomorrow to Aug. 3) as part of the Kimmel Center's Broadway at the Academy series.

Dario's avoidance of theater ended when fate intervened. "Because of a sports injury, I went out for 'Pippin' in my senior year in high school, and landed the title role. I loved everything about the experience."

That love was permanently revived at Rowan, and immediately after college when Dario, now 32, was asked to understudy a part in the national tour of "Les Miserables." That experience was short-lived when he was invited to join a production of "Miss

IF YOU GO

Beauty and the Beast

Where: Academy of Music, Broad Street and Locust Avenue, Philadelphia

When: Tomorrow-Aug. 3

Tickets: \$27.50 to \$72.50

Information: (215) 893-1999.

Saigon" headed for Germany.

"I said yes because I had studied a bit of German in high school and college. What I didn't know was that the entire show was performed in German," said the actor, who was a quick study in the language once he needed it to perform.

The "Miss Saigon" role led to an

audition for the German version of "Beauty and the Beast," and the show has occupied center-stage in Dario's life ever since. While he initially played the role of Gaston, the arrogant, smirking macho man, he later landed the role of the Beast himself. "They are actually mirror images of one another," said Dario. "Gaston is actually a monster in the end, and the presumed 'beast' turns out not to be one."

The German experience was not just professionally fulfilling, but personally fulfilling as well. It was in Germany that Dario met his future wife Audri, also an actress, and currently a member of the ensemble in "Beauty and the Beast."

The couple has been the American

national company for the past three years, and they travel with their son, Blaze, 4.

Ironically, Dario knows he's performed his role as the bullying Gaston well when the audience boos him. "Initially, I was so worried that I went to management to ask what I was doing wrong. They assured me that I was doing everything right as long as the audience hated me."

When the show closes, Dario hopes to take several months off, settling into the home he and his family bought back in Sparta. "I'm not a city guy and never will be. But I can certainly travel to New York or Philadelphia. And for now, after years on the road, living quietly on a lake sounds mighty appealing."

SUGGESTIONS: CALL THE OUTLOOK DEPARTMENT 609-871-8143, MARTHA ESPOSITO, EDITOR

What's happening ...

12

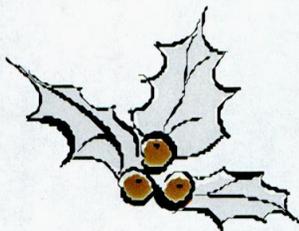
Spotlight on Research
4 p.m.
126 Fretwell

14

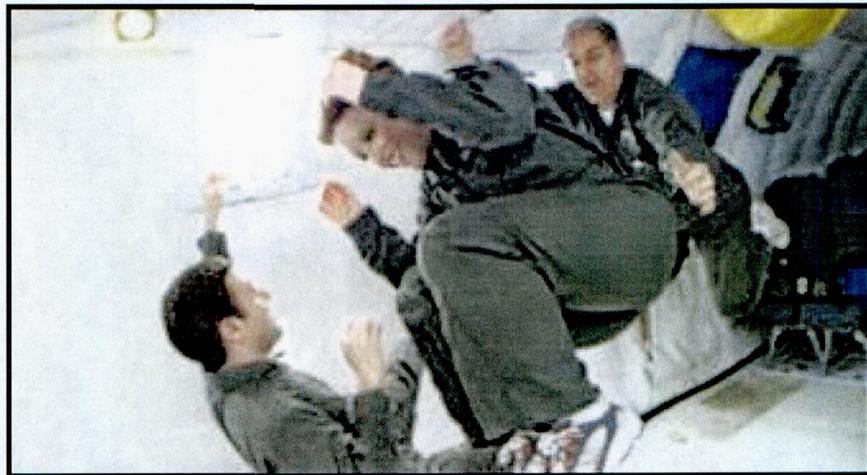
Winter Commencement
10 a.m. and 3 p.m.
Halton Arena

22

The Christmas Shoes Tour,
musical
7:30 p.m.
Halton Arena



For up-to-date
Campus Events
information and
further details about
the events listed above,
visit [www.uncc.edu/
campusevents](http://www.uncc.edu/campusevents)
or call the 24-hour
events hotline at
Ext. 4900



NASA astronauts test zero gravity in the KC-135A aircraft.

Team of UNC Charlotte and UNC Pembroke students to work aboard NASA's KC-135A

Just days after sending its first American Indian astronaut to space, the National Aeronautics and Space Administration (NASA) has selected a team of Lumbee students from UNC Charlotte and UNC Pembroke to participate in a highly competitive research program that will soon have them floating in zero gravity themselves.

The team's research proposal was one of 72 selected — during a blind screening process — from the more than 300 submitted by universities nationwide for NASA's KC-135A Reduced Gravity Undergraduate Research Program. They will join teams from MIT, Harvard, Purdue and other universities in testing their research in zero gravity.

The students, all of whom are members of the Lumbee Tribe of North Carolina, received news of their selection last Friday at a meeting on campus. The "Weighless Lumbees" team started work in October, preparing their research proposals using e-mail and videoconferencing labs at the two campuses.

The team will fly to Houston, Texas, to spend April 10-19 researching how liquids diffuse in a reduced gravity environment. To do so, the students — some of whom have previously never flown in a commercial aircraft — will be flying in NASA's KC-135A aircraft, an airplane that through controlled dives can simulate zero-gravity in its bay. The sensation has landed the research facility the dubious nickname of "vomit comet."

The team members, who met each other face-to-face for the first time as they learned their project had been selected, will begin conducting preliminary research in the next few weeks.

Both institutions conducted competitive selection processes for the student teams and released their final rosters Oct. 4. Team members at UNC Charlotte are Robbie Goins, Ginger Moody and Kiel Locklear. They are advised by Howard Phillips of electrical and computer engineering and Kathy Nunnally, an associate director of the learning center, and assisted by Teresa Williams, an international analyst at NASA on loan to the North Carolina Space Grant Consortium.

NASA's KC-135A Reduced Gravity Undergraduate Research Program is designed to inspire student interest in science, engineering and technology. For more information on the 2003 KC-135 program, visit their Web site at www.microgravity.nasa.gov or contact Teresa Williams at Ext. 2055.

[University Newswire](#)

PO Box 1510

Pembroke, NC 28372-1510

Date: December 17, 2002

Contact: Scott Bigelow

Email: scott.bigelow@uncp.edu

Phone: 910.521.6351

Fax: 910.521.6694

'The Weightless Lumbees' to Experiment with NASA



The Weightless Lumbees: From left are Cynthia Brewer, Robbie Goins, Toni Chagolla, Joe Oxendine, April Oxendine, Keil Locklear and Mary Beth Brayboy. Not pictured: Ginger Moody.

A UNC Pembroke and UNC Charlotte team of Lumbee Indian students have been selected for a NASA research program. Eight students, from Robeson, Hoke and Scotland counties, will conduct scientific experiments aboard a reduced-gravity aircraft.

The group, which has dubbed itself "The Weightless Lumbees," was selected from a highly competitive field of elite universities. They face a daunting task of raising approximately \$20,000 to finance the April flight.

Just days after sending its first American Indian astronaut to space, the National Aeronautics and Space Administration (NASA) selected a team of Lumbee students to participate in a research program that will soon have them floating in zero gravity.

The team's research proposal was one of 72 selected in a blind screening process from the more than 300 submitted by universities nationwide for NASA's KC-135A Reduced Gravity Undergraduate Research Program. They will join teams from MIT, Harvard, Purdue and other universities in testing their research in zero gravity.

The students, all members of the Lumbee Tribe of North Carolina, received news on Dec. 6 that one of two proposals had been accepted. On Dec. 16, they got the news that all eight students would fly with two experiments.

The "Weightless Lumbees" team started work in October, preparing their research proposals using email and videoconferencing labs at the two campuses.

The UNCP team members include: April Oxendine, a junior chemistry major from Lumberton, Toni Chagolla, a senior biology and chemistry major from Shannon, Cynthia Brewer a junior biomedical major from Shannon, Joe Oxendine, a senior molecular biotechnology major from Raeford and Mary Beth Brayboy, a senior mass communications major from Laurinburg.

The UNC Charlotte members include: Ginger Moody, a senior business major from Maxton, Robbie Goins, a junior civil engineering major from Pembroke and Kiel Locklear, a senior mechanical engineering major from Pembroke.

The team members are excited about the adventure.

"We are taking liquids of different weights and colors to see the effects of weightlessness on how they diffuse," said April Oxendine.

"We will also replicate the experiment here in the lab for comparison to what happens during weightlessness," said Joe Oxendine. "I should point out that, as the plane flies, we have 40 seconds of weightlessness during 40 parabolic flight paths."

During the press conference, there was considerable joking about the nickname of the NASA craft, which is often referred to as the "vomit comet."

"If they prepare themselves, they should not have any problems," said Brayboy, who as public relations coordinator for the group will not ride in the aircraft.

The group said they are proud to be selected, and they believe that NASA research is beneficial for their undergraduate experience and for the surrounding community.

"Research is a big thing for getting a job or going to graduate school," said Joe Oxendine. "This is a good thing."

"When we make presentations in elementary schools, kids can see that this kind of education is a possibility for them too," said Kiel Locklear.

"They are role models," Brayboy said.

Dr. Tim Ritter, a UNCP [chemistry](#) professor and advisor for the project, said there is a great deal to be proud of.

"The university and the community should all be proud of them," Dr. Ritter said. "How many times do people here get to be in the national spotlight?"

The team will fly to Houston, Texas, to spend April 10-19 researching how liquids diffuse in a reduced gravity environment. To do so, the students - some of whom have never flown in a commercial aircraft before - will be flying in NASA's KC-135A aircraft, an airplane that, through controlled dives, can simulate zero gravity in its bay. The sensation has landed the research facility the dubious nickname of "vomit comet."

The team members, who met each other face-to-face for the first time as they learned their project had been selected, will begin conducting preliminary research in the next few weeks.

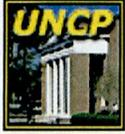
Team advisors say the students' research could prove valuable to those working at NASA on shuttle missions and international space station work. Their Aqueous Diffusion Rates (ADR) project could inform their work when mixing liquids in low gravity environments.

Both UNCP and UNC Charlotte conducted competitive selection processes for the student teams and released their final rosters Oct. 4.

NASA's KC-135A Reduced Gravity Undergraduate Research Program is designed to inspire student interest in science, engineering and technology. For more information on the 2003 KC-135 program, visit their website at www.microgravity.nasa.gov.

Contributions to The Weightless Lumbees' project may be made to the UNCP Foundation by calling 910.521.6252. For information, contact tim.ritter@uncp.edu.

[Return to University Newswire](#)



Fax: 910.521.6694
Email: scott.bigelow@uncp.edu



Department of Chemistry and Physics
One University Drive
P.O. BOX 1510
Pembroke, NC 28372-1510
(910) 521-6247

May 27, 2004

Johnson Space Center
Mail Code: AH2
2101 NASA Road 1
Houston, TX 77058-3696

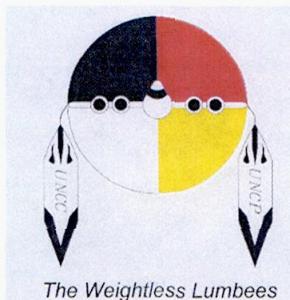
Dear Reduced Gravity Office:

On behalf of the "Weightless Lumbee's" team from The University of North Carolina at Charlotte and The University of North Carolina at Pembroke, I wanted to thank you once again for an amazing experience! Through all the adversity of engine swapping, you proved that your group is the cream of the crop at NASA. Without the hard work and long hours put in by yourselves and the maintenance crew, our flight week would have been a disaster. During one of the flights, Deanna asked me if I was planning on putting another team together and coming down again next year. If your group continues to run the program I certainly will. And the students would run me out of town if we didn't submit another proposal next year!

Thank you once again for making a hectic week one we look forward to during all the hard work of proposals, TEDP's, equipment building, and data analysis. We hope to see you again next year!

Sincerely,

Timothy M. Ritter
Associate Professor of Physics





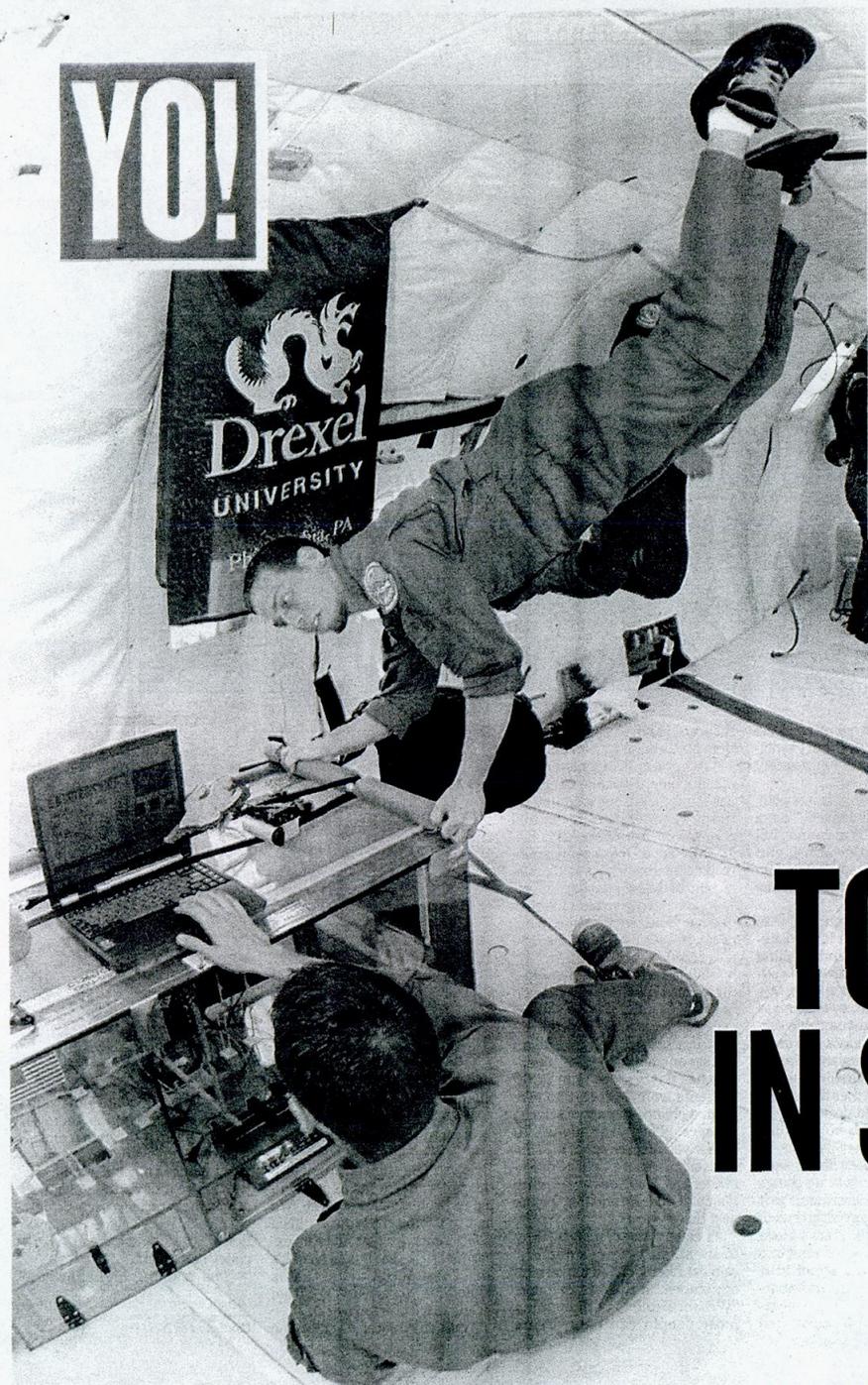
Johnson Space Center

UNC Charlotte and UNC Pembroke

Fluids in 0-g (FOG):
A Study of the Mixing
Properties of Fluids and
Enzyme Activity
in Reduced Gravity



YO!



**DREXEL
STUDENTS SOAR
TO LEARN MORE,
WITH HELP
FROM NASA**

By **ANGELA SWAFFORD**
For the Daily News

HOUSTON — Sitting on the white padded floor of NASA's KC-135A airplane flying over the Gulf of Mexico at an altitude of 24,000 feet, Drexel University senior Garrett Gross and sophomore Andrew Marx check that everything is running fine inside their team's experiment box.

Next to them, on a main cabin that has been nearly stripped of chairs and windows, are students and rigs from four other universities. Nervous and excited, the students smile and make little jokes. They are wearing olive green flight suits with mission patches and name tags.

"Two minutes!" yells veteran test director John Yaniec over the drowning roar of the engines.

Suddenly, the airplane climbs

Continued on Next Page

**TOSSED
IN SPACE**

Garrett Gross was among the Drexel students who gravitated toward NASA to expand their education.

There is more stuff in the works for other publications
Drexel

Photo courtesy of NASA



Jennifer Nolte has a "Vomit Comet" float.

Photos courtesy of NASA

Continued from Preceding Page

to 34,000 feet at a 45-degree angle, creating a few seconds of positive gravity that makes everything double in weight. Moving an arm suddenly becomes extremely difficult.

"Here we goooo!" yells Gross as the plane — nicknamed "the Vomit Comet" — levels off for a moment, like a roller coaster at the top. The sound of the engines goes to neutral and the lights of the cabin get brighter. Then, as the aircraft tips the nose back down 45 degrees and accelerates downward, it creates about 25 seconds of weightlessness, and everything that is not secured starts to float.

"Oh wow! This is sooo cool, a total blast," yells Gross as he starts lifting off the ground and hovers in midair just as an astronaut would in outer space. "I am floating! Just like that! It almost feels like I am underwater, except when I kick my legs and nothing happens. There is no air resistance. What a weird feeling!"

"Feet down, coming out!" yells

Yanic as several hands from the blue-uniformed flight crew orient the floating students safely toward the floor.

"When you are in space your senses get disoriented," says Marx, smiling. "You cannot tell which way is up or down, and here you could easily hurt yourself every time gravity comes back."

He doesn't have much time to speak, as the aircraft immediately starts another climb, pulling out of the parabolic dive and doubling the strength of Earth's gravitational pull, to culminate with another 25 memorable seconds of weightlessness, and so on for 32 times. Gross and Marx's job is to oversee the production of nano-scale polymer fibers, tiny threads that could be spun in orbit through a high-voltage discharge.

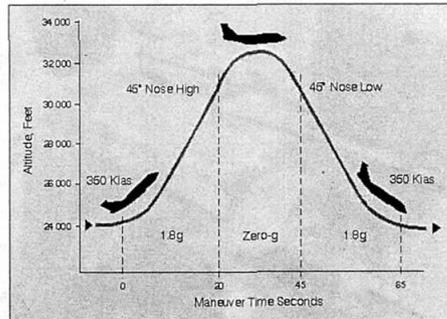
"Trillions of these fibers could eventually allow us to do things such as patch an astronaut suit or even repair a gap in the hull of a spaceship in orbit," says Marx as he checks data streaming into the laptop computer attached at the top of the rig. "It was important to produce them in weightlessness because we theorized

they would have a better quality than fibers produced on Earth."

"Other applications include making biodegradable fibers for use in medicine, for example, as tissue regenerators for spinal cord and brain injuries," says Brian DiPaolo, a Drexel senior biomedical engineering valedictorian who had flown the day before, "and even growing skin patches in case of burns resulting from accidents such as a fire inside a spacecraft."

This experiment, as well as those from other universities on board, are part of NASA's Reduced Gravity Student Flight Opportunities Program, which in the seven years since its inception has flown more than 2,000 students from 44 states, to give them a chance to pursue science careers. This year alone, 70 teams were chosen out of 103 submissions. Drexel's College of Engineering has been sending teams of undergraduates for the past three years.

"I can't think of a better way to spend part of my summer," said Jennifer Nolte, a junior biology student at Rutgers-Camden. "We were able to do something most people can only dream



This flight path will send you flying.

about, and learn a lot in the process."

According to Mary Sullivan, a chemical engineering student at Drexel, "The student projects in this program are just as demanding as professional research. We had to submit a proposal plus a safety report, and produce an experiment rig that meets NASA's strict standards ... and that is something you couldn't get from sitting in a lecture hall."

But before setting foot on the

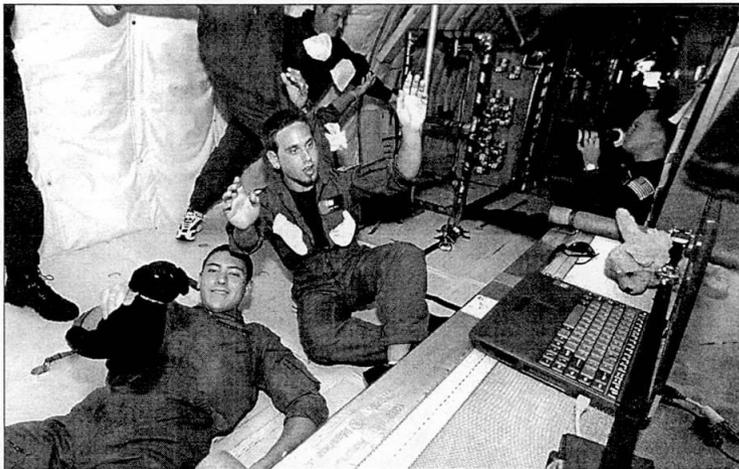
KC-135, the students — and journalists accompanying them — have to make it through a day of lectures, physiological training and testing. They have to pass a written test covering gas laws, atmospheric science, physiological principles of balance and motion sickness, and aircraft emergency equipment.

The training highlight is a

Continued on Next Page

Gross and Andrew Marx (left) find that science can be relaxing.

The KC-135A, aka "the Vomit Comet."



Photos courtesy of NASA



Gross gets a view from up front.



The Drexel team (from left): Garrett Gross, Andrew Marx, Angela Swafford, Jennifer Nolte and Brian DiPaolo.

Continued from Preceding Page

most interesting afternoon in NASA's big decompression chamber, in which the group of 15 and two NASA technicians are rapidly decompressed to a pressure equivalent to an altitude of 25,000 feet. The idea is to acquaint fliers with emergency

breathing equipment and the symptoms of hypoxia, to make sure participants could cope if the aircraft cabin suddenly lost pressure.

"We had to sit there breathing pure oxygen for half an hour through a tight mask before the decompression began," said Nolte. "Then, at the simulated altitude, we had to take our masks off and start writing a series of

easy tests. But the lack of oxygen makes you feel disoriented. Your lips turn blue and you feel funny."

On flight day everyone is issued a uniform and name badge and has to sit through an important safety and medical briefing. Each college team has the right to fly their experiment twice, with two different team members per flight. The rest act as ground crews for that day and get to be

the designated drivers for the fliers who have taken NASA's strong concoction of Scopalamine and Dexedrine, to help avoid motion sickness.

"The medicine dries your mouth and throat and makes you feel a little bit high, but it definitely helps most people. I highly recommend everybody taking it," said Gross. "After all, your body goes through some stuff it's never gone through before. We learned that what causes motion sickness in this airplane is that your visual system is saying you're not moving but your vestibular system is out in left field."

Bright-eyed and inspired, the students walk off the plane amid

cheers from their team members and ground crews, and then go through a series of short NASA-style briefings. In their minds, many of them are already considering becoming astronauts.

"It was the ultimate roller coaster ride," said DiPaolo.

This year's project is supported by the A.J. Drexel Institute of Nanotechnology, led by professor Yuri Gogotsi, according to Mun Choi, head of Drexel's mechanical engineering department, who's been involved in the program since the beginning. The new institute will be housed in the I.M. Pei-designed \$36 million Bossone Engineering Research Facility to be located at Market and 32nd streets. ★



PHILADELPHIA
DAILY NEWS
THE PEOPLE PAPER

- City & Local News
- Sports
- YO! Features
- Opinion
- Columnists
- National News
- Obituaries
- NEW! Ellen Gray Weblog
- Grow the City!
- Parking Tickets Probe
- Affiliates
- Bucks Midweek**
- Montco Midweek**
- Northeast Times**
- Philadelphia Zoo**
- Taste of Philadelphia**
- Franklin Institute**
- Homes and Living**
- Beach and Bay Homes**
- Active Adult Housing**
- My Wedding**

This Week's Sales

E-Mail Alerts!

Get the latest store sales and specials from the Inquirer and Daily News **delivered to your desktop!**

Search for Ads:

Using:

any word

Search Articles-last 7 days for

[Back to Home >](#)

Thursday, Jul 24, 2003

[» Employment](#)

career!

- Find a Jo
- Post a Ré
- Post a Jo

[» Autom](#)

- Find a Ca
- Sell a Ca
- Weekly S

[» Real Es](#)



- Find a Ho
- Find an A
- Moving R

[» Local S](#)

- Search C
- See This Sales
- Online Co
- Place an

Featured

- Find a Lo
- Meet Som
- Find a Ho
- Book Air

Posted on Thu, Jul. 24, 2003



Tossed in space

Drexel students soar to learn more, with help from NASA

By ANGELA SWAFFORD
For the Daily News

HOUSTON - Sitting on the white padded floor of NASA's KC-135A airplane flying over the Gulf of Mexico at an altitude of 24,000 feet, Drexel University senior Garrett Gross and sophomore Andrew Marx check that everything is running fine inside their team's experiment box.

Next to them, on a main cabin that has been nearly stripped of chairs and windows, are students and rigs from four other universities. Nervous and excited, the students smile and make little jokes. They are wearing olive green flight suits with mission patches and name tags.

"Two minutes!" yells veteran test director John Yaniec over the drowning roar of the engines.

Suddenly, the airplane climbs to 34,000 feet at a 45-degree angle, creating a few seconds of positive gravity that makes everything double in weight. Moving an arm suddenly becomes extremely difficult.

"Here we goooo!" yells Gross as the plane - nicknamed "the Vomit Comet" - levels off for a moment, like a roller coaster at the top. The sound of the engines goes to neutral and the lights of the cabin get brighter. Then, as the aircraft tips the nose back down 45 degrees



[» More photos](#)

Garrett Gross was among the Drexel students who gravitated toward NASA to expand their education. Photo, Courtesy of NASA

Browse Categories:

[Automotive & Ve... \(43\)](#)

[Real Estate & R... \(9\)](#)

[Medical \(7\)](#)

[Communications \(6\)](#)

[Travel & Hotels \(4\)](#)

[Dining & Entert... \(3\)](#)

[Charity \(3\)](#)

[Finance \(3\)](#)

[Auctions & Esta... \(3\)](#)

[Furniture \(2\)](#)

[click here for more](#)

and accelerates downward, it creates about 25 seconds of weightlessness, and everything that is not secured starts to float.

"Oh wow! This is sooo cool, a total blast," yells Gross as he starts lifting off the ground and hovers in midair just as an astronaut would in outer space. "I am floating! Just like that! It almost feels like I am underwater, except when I kick my legs and nothing happens. There is no air resistance. What a weird feeling!"

"Feet down, coming out!" yells Yaniec as several hands from the blue-uniformed flight crew orient the floating students safely toward the floor.

"When you are in space your senses get disoriented," says Marx, smiling. "You cannot tell which way is up or down, and here you could easily hurt yourself every time gravity comes back."

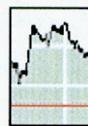
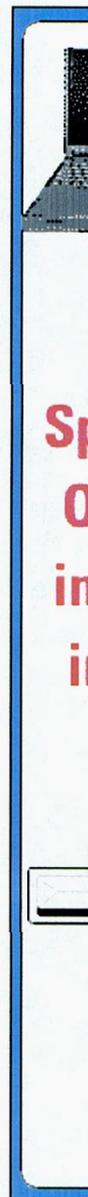
He doesn't have much time to speak, as the aircraft immediately starts another climb, pulling out of the parabolic dive and doubling the strength of Earth's gravitational pull, to culminate with another 25 memorable seconds of weightlessness, and so on for 32 times. Gross and Marx's job is to oversee the production of nano-scale polymer fibers, tiny threads that could be spun in orbit through a high-voltage discharge.

"Trillions of these fibers could eventually allow us to do things such as patch an astronaut suit or even repair a gap in the hull of a spaceship in orbit," says Marx as he checks data streaming into the laptop computer attached at the top of the rig. "It was important to produce them in weightlessness because we theorized they would have a better quality than fibers produced on Earth."

"Other applications include making biodegradable fibers for use in medicine, for example, as tissue regenerators for spinal cord and brain injuries," says Brian DiPaolo, a Drexel Senior Biomedical Engineering valedictorian who had flown the day before, "and even growing skin patches in case of burns resulting from accidents such as a fire inside a spacecraft."

This experiment, as well as those from other universities on board, are part of NASA's Reduced Gravity Student Flight Opportunities Program, which in the seven years since its inception has flown more than 2,000 students from 44 states, to give them a chance to pursue science careers. This year alone, 70 teams were chosen out of 103 submissions. Drexel's College of Engineering has been sending teams of undergraduates for the past three years.

"I can't think of a better way to spend part of my summer," said Jennifer Nolte, a junior biology student at Rutgers-Camden. "We were able to do something most people can only dream about, and learn a lot in the process."



Stocks

Enter symbol

According to Mary Sullivan, a chemical engineering student at Drexel, "The student projects in this program are just as demanding as professional research. We had to submit a proposal plus a safety report, and produce an experiment rig that meets NASA's strict standards...and that is something you couldn't get from sitting in a lecture hall."

But before setting foot on the KC-135, the students - and journalists accompanying them - have to make it through a day of lectures, physiological training and testing. They have to pass a written test covering gas laws, atmospheric science, physiological principles of balance and motion sickness, and aircraft emergency equipment.

The training highlight is a most interesting afternoon in NASA's big decompression chamber, in which the group of 15 and two NASA technicians are rapidly decompressed to a pressure equivalent to an altitude of 25,000 feet. The idea is to acquaint fliers with emergency breathing equipment and the symptoms of hypoxia, to make sure participants could cope if the aircraft cabin suddenly lost pressure.

"We had to sit there breathing pure oxygen for half an hour through a tight mask before the decompression began," said Nolte. "Then, at the simulated altitude, we had to take our masks off and start writing a series of easy tests. But the lack of oxygen makes you feel disoriented. Your lips turn blue and you feel funny."

On flight day everyone is issued a uniform and name badge and has to sit through an important safety and medical briefing. Each college team has the right to fly their experiment twice, with two different team members per flight. The rest act as ground crews for that day and get to be the designated drivers for the fliers who have taken NASA's strong concoction of Scopolamine and Dexedrine, to help avoid motion sickness.

"The medicine dries your mouth and throat and makes you feel a little bit high, but it definitely helps most people. I highly recommend everybody taking it," said Gross. "After all, your body goes through some stuff it's never gone through before. We learned that what causes motion sickness in this airplane is that your visual system is saying you're not moving but your vestibular system is out in left field."

Bright-eyed and inspired, the students walk off the plane amid cheers from their team members and ground crews, and then go through a series of short NASA-style briefings. In their minds, many of them are already considering becoming astronauts.

"It was the ultimate roller coaster ride," said DiPaolo.

This year's project is supported by the A.J. Drexel Institute of Nanotechnology, led by professor Yury Gogotsi, according to Mun Choi, head of Drexel's mechanical engineering department, who's

been involved in the program since the beginning. The new institute will be housed in the I.M. Pei-designed \$36 million Bossone Engineering Research Facility to be located at Market and 32nd streets.



[email this](#) | [print this](#)

RELATED LINKS

- » [Jonathan Takiff | Finally, DVD recording made easier](#)
- » [Sex with the ex, and sex more complex](#)
- » [Stu Bykofsky | Whitney vs. The Beat](#)
- » [Tattle | Brown splits with wife to be with her on tour](#)



© 2003 Real Cities
All rights reserved.
Printed on recycled paper.

[Help](#) | [Contact Us](#) | [Archives](#) | [Place an Ad](#) | [Newspaper Subscriptions](#)
[About Philly.com](#) | [About Realcities Network](#) | [Terms of Use & Privacy Statement](#) | [About Copyright](#)



TRIDENT

*A Navy Chief of Information and Maryland-Delaware-D.C. Press Association award
winning newspaper - serving the Annapolis-area community since 1990*

Vol. 13 No. 14

Annapolis, Md.

Friday, April 18, 2003



BRIGADE NEWS

Space facts spark children's interest in math, science

By JO1 Jennifer L. Wuest
Trident News Editor

A pair of midshipmen visited Germantown Elementary School in Annapolis April 9 to talk about math, science and traveling to space.

Midns. 1/C Rebecca Baumez and Michael Krueger are part of a group of midshipmen heading to Houston Thursday to participate in a zero gravity experiment with NASA. During the experiment, they will be using a modified tape measure as a gravity gradient boom. The tape measure will be extended to eight feet, and a weight placed on the end. It is hoped in zero gravity, the weight will point to the center of the earth.

The midns will perform their experiment in NASA's special KC-135 aircraft, nicknamed the "Vomit Comet."

During their presentation to a fourth-grade class, Baumez and Krueger talked about satellites and their experiment.

They asked questions of the class such as "what is a satellite?" and made comparisons between the International Space Station, communications satellites, and the earth itself – the earth is a satellite around the sun, said Baumez.

They showed the children pictures of PCSat, the first midshipman-constructed satellite, and explained how it worked.

Krueger talked about the International Space Station and asked the class if they knew what the large panels protruding from the side were.

One child responded, "It collects the sun." Another



USNA photo by JO1 Jennifer L. Wuest

Midns. 1/C Rebecca Baumez and Michael Krueger, who will be participating in a series of experiments with NASA later this month, demonstrate their experiment for fourth-graders at Germantown Elementary School.

said, "It gives energy to the satellite."

Baumez shared "funny facts about satellites." Examples included the 7.5 billion miles of cable needed to operate a satellite; the fact that many satellites fly up to two billion miles to reach their destination; and some satellites have antennas as large as a football field.

They then demonstrated what their experiment would do in the "Vomit Comet," talked about how the plane flies on a special trajectory.

The "Vomit Comet" will fly nearly straight up, at about a 45 degree angle, then level out – this will allow for about 25-30 seconds of weightlessness before the plane begins to go back down at a similar angle. The up and down motion of the plane is where the nickname was developed.

The midns then took questions from the children – some questions included what NASA stands for (National Aeronautics and Space Administration), what satellites can be used for (communications, taking pictures of the earth), how much work it takes to become an astronaut (a lot, especially in math and science) and how long it takes to get to space (about 11 minutes).

"There are many careers that work in space," said Baumez.

"A large portion of being considered by NASA to do this project was our ability to educate others as well as ourselves," said Midn. 1/C Jenna Van Zeyl, another member of the group.

"Although we were not expecting the younger students to fully understand our gravity gradient boom experiment, we were hoping to spark an interest in them to study the technical fields.

"We might not be expecting future astronauts, but pushing them to study more math and science can produce future doctors, engineers and scientists."



TRIDENT

A Navy Chief of Information and Maryland-Delaware-D.C. Press Association award
winning newspaper - serving the Annapolis-area community since 1990

Vol. 13 No. 19

Annapolis, Md.

Friday, May 23, 2003

Mids conduct experiments in space ... almost

By JO1 Jennifer L. Wuest
Trident News Editor

Several academy graduates have gone on to join the space program, and a group of five midshipmen recently followed to the outer limits ... without leaving Earth.

Midns: 1/C Jenna Van Zeyl,

Adam Madson, Rebecca Baumez, Michael Krueger, and Tom Kolwicz visited NASA's Johnson Space Center in Houston. Their purpose - to perform experiments onboard the "Vomit Comet," a special KC-135 aircraft designed to create environments of zero gravity.

Their experiment, a gravity gradient boom, consisted of a tape measure on a reel that was deployed in zero gravity. A weight was placed on the end (after the tape measure was extended eight feet), and two rods measured the bending and torsional frequencies.

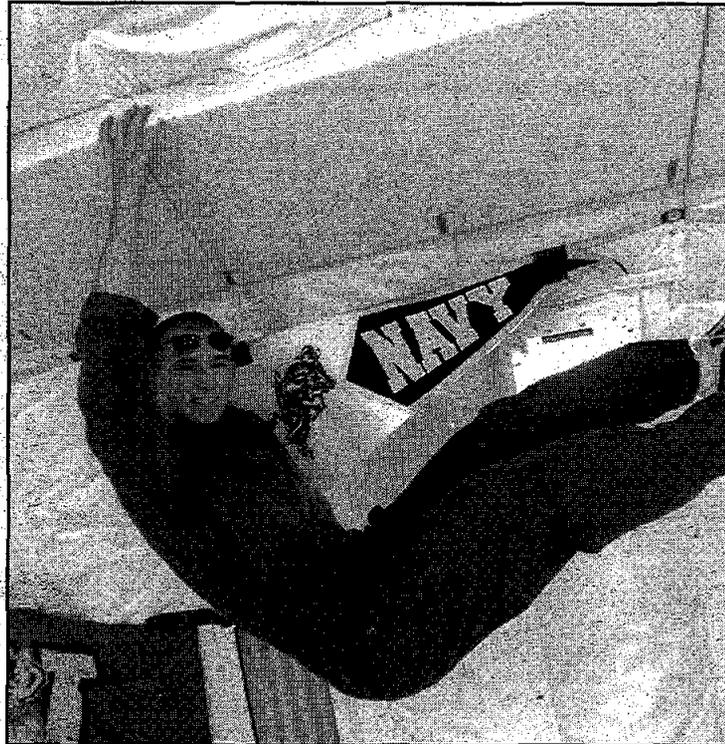
Upon arrival in Houston, the midshipmen prepared for zero gravity flight. They entered a simulator to experience the effects of hypoxia, or lack of oxygen. "We acted so silly," said Van Zeyl.

After simulator and instructional video training, the mids began their flights. They learned many lessons about working in zero gravity.

"We learned that it was much harder to work in zero gravity than we thought it would be," said Van Zeyl.

"You take the little things for granted when you are on Earth. Our experiment was not as successful as we would have hoped on the first flight. We used most of that flight as a learning tool for the next flight.

"Experiencing zero gravity is unlike anything you would ever expect. Your first reaction is to kick your legs because you are so used to it but in fact that is the worst thing you can do. The best thing is to only move with your arms and try to keep your legs as still as possible. You can become



Midn. 1/C Tom Kolwicz got a taste of working in anti-gravity while at NASA in Houston.

extremely dizzy at any moment just by turning your body in any quick movement."

"Always bring a barf bag," said Baumez. "I also learned that is about working as a team to complete the mission, because it's difficult to get a big job done by yourself in such a different situation."

"It is much harder to move when there is no gravity," said Krueger. "The two biggest lessons learned were to

make sure all heavy objects are secured, and do not perform too many somersaults."

"Move slowly while working, and don't make any sudden head movements," said Madson. "By doing this, you have a lower chance of getting disoriented and sick."

In addition to enjoying the zero gravity experience, the midshipmen had a positive experience working with NASA on their experiment.

"This experience let us learn a lot about the way NASA works and the kind of people that work for them," said Van Zeyl. "Even though our experiment was entirely independent and we received no grade for completing it, the experience was by far one of the best I have had as an aerospace engineering student.

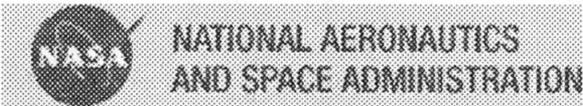
"My favorite part of the trip was applying the skills that I have been learning throughout my four years here to design a system that can be applicable to the small satellite program here in the future."

"The best part of the trip was actually working with NASA," said Krueger. "We got the opportunity to see and do some really interesting things like the neutral buoyancy pool that the astronauts use to train in. The best part of conducting the experiment was actually seeing it work in zero gravity after all the hard work that was put into it."

"The trip taught teamwork and discipline," said Baumez. "I learned that you have to work every day on projects to complete them."

"The greatest impact this project had on me was to reaffirm my goal of working in the space business," said Madson. "It was one of the most incredible experiences I've been able to participate in."

"The experience was also extremely valuable to our careers as naval officers," said Krueger. "It was an environment that required a lot of teamwork and



+ Low Bandwidth
+ Contact NASA



- [+ ABOUT NASA](#)
- [+ NEWS & EVENTS](#)
- [+ MULTIMEDIA](#)
- [+ MISSIONS](#)
- [+ POPULAR TOPICS](#)
- [+ MyNASA](#)

[+ Home](#)

F-11 JFE

Reduced-Gravity Student Flight Opportunities

06.26.03

For Educators
(Post Secondary)

- FEATURES AND NEWS
- + LEARNING RESOURCES
- + INTERNET RESOURCES
- + MULTIMEDIA RESOURCES
- + CONTACTS FOR EDUCATORS
- + FELLOWSHIPS AND GRANTS
- + STUDENT OPPORTUNITIES

Choose another category:

- + For Educators K-4
- + For Educators 5-8
- + For Educators 9-12
- + For Informal Educators



Inside view of KC-135 aircraft

This is an opportunity for faculty members to encourage their undergraduate students, who are interested in reduced-gravity experiments, to fly with their projects on a NASA KC-135. The flights take place from Ellington Field in Houston, Texas, and teams are selected in a proposal process through the Microgravity University Office at NASA Johnson Space Flight Center. The competition will accommodate up to 72 teams per year.

Participants must be U.S. citizens and registered full-time students at an accredited U.S. university. All teams travel to Ellington Field in Houston, Texas, for two weeks to participate in Flight Readiness Reviews and then flight. Teams are required after their flights to implement an education and outreach plan.

Students will propose, design, fabricate, fly and evaluate a reduced-gravity experiment of their choice over the course of six months. The overall experience includes scientific research, hands-on experimental design, test operations and educational/public outreach activities.

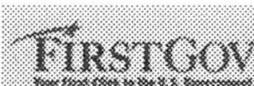
A maximum of 4 flyers per team are allowed on the aircraft. A student team contact person must be designated to serve as the liaison between NASA/JSC and the team. The team contact is responsible for keeping all team members (including faculty, NASA advisor, journalist) informed of program activities and announcements and responding in a timely manner to all requests for information.

Letters of Intent are due in September, with proposals due in October.

Visit the Web site for information about the proposal process, medical requirements, pictures, contacts at NASA, dates, times, and places.

Reduced-Gravity Student Flight Opportunities

[+ View site](#)



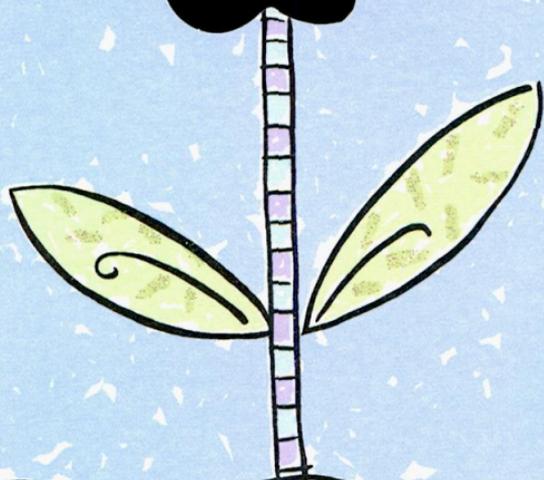
- + 2003 Strategic Plan
- + Freedom of Information Act
- + The President's Management Agenda
- + FY 2002 Agency Performance and Accountability Report
- + NASA Privacy Statement, Disclaimer, and Accessibility Certification
- + Freedom to Manage



Editor: Shelly Canright
NASA Official: Brian Dunbar
Last Updated: July 7, 2003
[+ Contact NASA](#)



Leave It to You!



It was
completely
wonderful...

simply



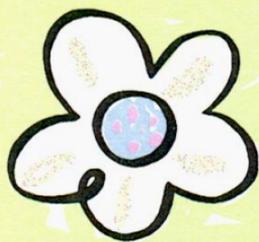
great...

Warm and touching...



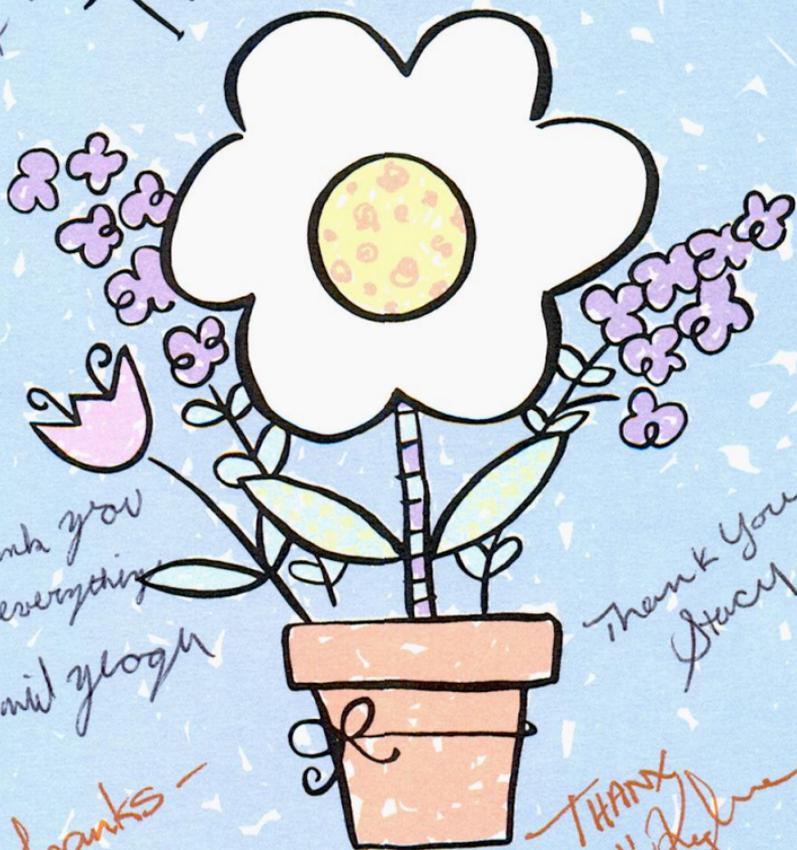


Very,
very much
appreciated...



FROM THE
UNIVERSITY
OF WYOMING

Thank you



Thank you
for everything
I will always

Thank you,
Steve!

thanks -
Patricia

forever.

THANK
"Alyssa"

Thanks
a million
Katherine
Darden

EXPRESSIONS
FROM

Hallmark

www.hallmark.com



U.S.A. 3.49
Canada 4.59
JT 74 H

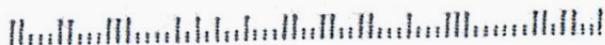
© HALLMARK CARDS, INC.
KANSAS CITY, MO 64141
TORONTO, CANADA M2J 1P6
MADE IN U.S.A.

UNIVERSITY OF WYOMING
MICRO-GRAVITY RESEARCH GROUP
ENGINEERING BUILDING 2019
LARAMIE, WY 82070



Ms. Barbara Eberdat
Johnson Space Center
Mail Code AH2
2101 NASA Road 1
Houston TX 77058-3696

77058+3607 13



ORLANDO BUSINESS JOURNAL
Orlando, FL

WEEKLY

9,491

MAR 6, 2003



M40341

LUCE PRESS CLIPPINGS

Skyward. NASA released the top level requirements for the Orbital Space Plane, a next-generation system of space vehicles designed to be launched from Kennedy Space Center to provide a crew rescue and crew transport capability to and from the International Space Station.

"This is an important first step in making the Integrated Space Transportation Plan a reality," said NASA Deputy Administrator Frederick Gregory. "These initial requirements help to outline a comprehensive system that will significantly complement the capabilities of our existing space shuttle fleet."

The requirements are available on the Internet at: http://www.nasa.gov/missions/current/MI_FM_osp.html.

Flying high. Two student teams from Daytona Beach-based Embry-Riddle Aeronautical University were selected by NASA to conduct experiments of their own design aboard NASA's KC-135, a research aircraft that flies parabolic arcs to simulate weightlessness.

The first team, which will participate in NASA's Reduced Gravity Student Flight Opportunities Program from April 24 to May 3, will conduct research into the effects of near-zero gravity on fluid pressure in the head.

The second team, scheduled for July 10-19, will test a device that cleans contaminants from the air in reduced gravity without using filters.

Held annually at Ellington Field near the Lyndon B. Johnson Space Center in Houston, the program is sponsored by NASA in an effort to increase the number of technical professionals graduating from U.S. colleges and universities.

AIRPORT PRESS
Jamaica, NY

MONTHLY

18,000

MAR 2003



LUCE

M10428

PRESS CLIPPINGS

EMBRY-RIDDLE STUDENTS TO CONDUCT EXPERIMENTS ON NASA AIRCRAFT

Two student teams from Embry-Riddle Aeronautical University have been selected by NASA to conduct experiments of their own design aboard NASA's KC-135, a research aircraft that flies parabolic arcs to simulate weightlessness.

The first team, which will participate in NASA's Reduced Gravity Student Flight Opportunities Program from April 24 to May 3, will conduct research into the effect of near-zero gravity on fluid pressure in the head. The second team, scheduled for July 10-19, will test a device that cleans contaminants from the air in reduced

gravity without using filters.

A review panel of NASA scientists and engineers selected 72 student teams from across the nation to participate in this year's program, which starts

March 13 and ends Aug. 2. Most teams consist of four undergraduate students, a supervising faculty member, and a professional journalist who will report on the team's experiences. The Embry-Riddle students participating in the program are pursuing degrees in aeronautical science, aerospace engineering, and engineering physics. ■



EMBRY-RIDDLE
AERONAUTICAL UNIVERSITY

WASHINGTON
BUSINESS JOURNAL
Arlington, VA

WEEKLY

18,221

MAR 6, 2003



LUCE

M11168

PRESS CLIPPINGS

■ ORLANDO, FLA.

Two student teams from Daytona Beach, Fla.-based **EMBRY-RIDDLE AERONAUTICAL UNIVERSITY** have been selected by NASA to conduct experiments of their own design aboard NASA's KC-135, a research aircraft that flies parabolic arcs to simulate weightlessness.

The first team, which will participate in

NASA's Reduced Gravity Student Flight Opportunities Program from April 24 to May 3, will conduct research into the effects of near-zero gravity on fluid pressure in the head.

The second team, scheduled for July 10-19, will test a device that cleans contaminants from the air in reduced gravity without using filters.

Held annually at Ellington Field near the Lyndon B. Johnson Space Center in Houston, the program is sponsored by NASA in an effort to increase the number of technical professionals graduating from U.S. colleges and universities.

A review panel of NASA scientists and engineers selected 72 student teams from across the nation to participate in this year's program, which starts March 13 and ends Aug. 2. Most teams consist of four undergraduate students, a supervising faculty member and a professional journalist who will report on the team's experiences.

The Embry-Riddle students participating in the program are pursuing degrees in aeronautical science, aerospace engineering, and engineering physics.

SPACE NEWS
Springfield, VA

WEEKLY

16,610

MAR 10, 2003



LUCE

M66718

PRESS CLIPPINGS

■ STUDENT MICROGRAVITY EXPERIMENTS

Two teams of students from Embry-Riddle Aeronautical University in Daytona Beach, Fla., have been selected to conduct experiments aboard NASA's KC-135 microgravity research aircraft, NASA announced.

The two teams will conduct their research under NASA's Reduced Gravity Student Flight Opportunities Program, which is designed to increase the number of technical professionals graduating from U.S.-based colleges and universities.

One of the experiments will gauge the effect of microgravity on fluid pressure in a person's head. The other experiment will test a device that cleans contaminants from air without using filters.

As part of the program, the students must share their experiences and results with the public, especially other students, to help generate interest in math, science and engineering.

The students will make presentations at high schools and museums, demonstrate their experiments and show video of their flights.

AOPA FLIGHT TRAINING
Frederick, MD

MONTHLY

66,825

MAY 2003



M67284

LUCE *PRESS CLIPPINGS*

ERAU students to conduct studies on NASA aircraft

Two student teams from Embry-Riddle Aeronautical University (ERAU) have been selected by NASA to conduct experiments of their own design aboard NASA's KC-135. Also known as the "Vomit Comet," the airplane is used for research by flying parabolic arcs to simulate weightlessness.

The first ERAU team to participate in the program—April 24 through May 3—was to conduct research into the effect of near-zero gravity on fluid pressure in the human head. The second team, scheduled for July 10 through 19, will test a device that cleans contaminants from the air in reduced gravity without using filters.

Held annually at Ellington Field near the Lyndon B. Johnson Space Center in Houston, Texas, the program is sponsored by NASA in an effort to increase the number of technical professionals graduating from U.S. schools. NASA selected 72 student teams from across the country to participate in this year's program.

EBADAT, BARBARA A. (JSC-AH) (SJC)

From: SICKOREZ, DONN G. (JSC-AH) (NASA)
Sent: Tuesday, June 03, 2003 2:41 PM
To: WILMORE, DEANNA C. (JSC-AH) (SJC); EBADAT, BARBARA A. (JSC-AH) (SJC)
Subject: FW: "Weightless" update from David Hartkop

Should probably file this away somewhere. We do "awards" and things - this is the documentary film about the program.

-----Original Message-----

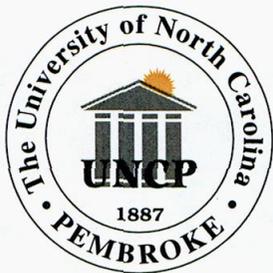
From: dave@robotrumpus.com [mailto:dave@robotrumpus.com]
Sent: Tuesday, June 03, 2003 2:21 PM
To: SICKOREZ, DONN G. (JSC-AH) (NASA)
Subject: "Weightless" update from David Hartkop

Dr. Sickorez,

Just checking to make sure you recieved a copy of my short documentary, "Weightless." We have been making progress in distributing it via television, still in the running with PBS and Discovery Science. The film recently recieved two Telly Awards, and was also a finalist in the national Videography awards.

I hope all is well at JSC, and have only words of praise for your exceptional program.

Sincerely,
David Hartkop.



Department of Chemistry and Physics
One University Drive
P.O. BOX 1510
Pembroke, NC 28372-1510
(910) 521-6247

April 28, 2003

Deanna Wilmore
Johnson Space Center
Mail Code: AH2
Houston, TX 77058-3696

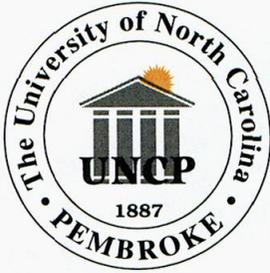
Dear Deanna:

On behalf of the *Weightless Lumbee's* from the University of North Carolina at Charlotte and UNC Pembroke I want to thank you for everything during our experience at Ellington Field. I was most impressed with you and the rest of the Reduced Gravity Office staff, and I am not just saying this to be nice. I thank you for your untiring patience with all of my phone calls asking for guidance and information. You made the experience much more enjoyable. You are all truly one of NASA's best assets. I know the students had a once in a lifetime experience and have not stopped talking about it since we returned. In fact, they are already making plans for next year!

Thank you once again and I look forward to working with you and your colleagues again. When your husband does fly into space make sure he takes a Navy flag with him!

Sincerely,

Timothy M. Ritter
Associate Professor of Physics



Department of Chemistry and Physics
One University Drive
P.O. BOX 1510
Pembroke, NC 28372-1510
(910) 521-6247

April 28, 2003

Barbara Ebadat
Johnson Space Center
Mail Code: AH2
2101 NASA Road 1
Houston, TX 77058-3696

Dear Barb:

On behalf of the *Weightless Lumbee*'s from the University of North Carolina at Charlotte and UNC Pembroke I want to thank you for everything during our experience at Ellington Field. I was most impressed with you and the rest of the Reduced Gravity Office staff, and I am not just saying this to be nice. With out you constantly reminding us of deadlines, in the kindest of ways, we would have surely missed one and possibly been unable to participate. You are all truly one of NASA's best assets. I know the students had a once in a lifetime experience and have not stopped talking about it since we returned. In fact, they are already making plans for next year!

Thank you once again and I look forward to working with you and your colleagues again.

Sincerely,

Timothy M. Ritter
Associate Professor of Physics

[University Newswire](#)

PO Box 1510

Pembroke, NC 28372-1510

Date: December 17, 2002

Contact: Scott Bigelow

Email: scott.bigelow@uncp.edu

Phone: 910.521.6351

Fax: 910.521.6694

'The Weightless Lumbees' to Experiment with NASA



The Weightless Lumbees: From left are Cynthia Brewer, Robbie Goins, Toni Chagolla, Joe Oxendine, April Oxendine, Keil Locklear and Mary Beth Brayboy. Not pictured: Ginger Moody.

A UNC Pembroke and UNC Charlotte team of Lumbee Indian students have been selected for a NASA research program. Eight students, from Robeson, Hoke and Scotland counties, will conduct scientific experiments aboard a reduced-gravity aircraft.

The group, which has dubbed itself "The Weightless Lumbees," was selected from a highly competitive field of elite universities. They face a daunting task of raising approximately \$20,000 to finance the April flight.

Just days after sending its first American Indian astronaut to space, the National Aeronautics and Space Administration (NASA) selected a team of Lumbee students to participate in a research program that will soon have them floating in zero gravity.

The team's research proposal was one of 72 selected in a blind screening process from the more than 300 submitted by universities nationwide for NASA's KC-135A Reduced Gravity Undergraduate Research Program. They will join teams from MIT, Harvard, Purdue and other universities in testing their research in zero gravity.

The students, all members of the Lumbee Tribe of North Carolina, received news on Dec. 6 that one of two proposals had been accepted. On Dec. 16, they got the news that all eight students would fly with two experiments.

The "Weightless Lumbees" team started work in October, preparing their research proposals using email and videoconferencing labs at the two campuses.

The UNCP team members include: April Oxendine, a junior chemistry major from Lumberton, Toni Chagolla, a senior biology and chemistry major from Shannon, Cynthia Brewer a junior biomedical major from Shannon, Joe Oxendine, a senior molecular biotechnology major from Raeford and Mary Beth Brayboy, a senior mass communications major from Laurinburg.

The UNC Charlotte members include: Ginger Moody, a senior business major from Maxton, Robbie Goins, a junior civil engineering major from Pembroke and Kiel Locklear, a senior mechanical engineering major from Pembroke.

The team members are excited about the adventure.

"We are taking liquids of different weights and colors to see the effects of weightlessness on how they diffuse," said April Oxendine.

"We will also replicate the experiment here in the lab for comparison to what happens during weightlessness," said Joe Oxendine. "I should point out that, as the plane flies, we have 40 seconds of weightlessness during 40 parabolic flight paths."

During the press conference, there was considerable joking about the nickname of the NASA craft, which is often referred to as the "vomit comet."

"If they prepare themselves, they should not have any problems," said Brayboy, who as public relations coordinator for the group will not ride in the aircraft.

The group said they are proud to be selected, and they believe that NASA research is beneficial for their undergraduate experience and for the surrounding community.

"Research is a big thing for getting a job or going to graduate school," said Joe Oxendine. "This is a good thing."

"When we make presentations in elementary schools, kids can see that this kind of education is a possibility for them too," said Kiel Locklear.

"They are role models," Brayboy said.

Dr. Tim Ritter, a UNCP [chemistry](#) professor and advisor for the project, said there is a great deal to be proud of.

"The university and the community should all be proud of them," Dr. Ritter said. "How many times do people here get to be in the national spotlight?"

The team will fly to Houston, Texas, to spend April 10-19 researching how liquids diffuse in a reduced gravity environment. To do so, the students - some of whom have never flown in a commercial aircraft before - will be flying in NASA's KC-135A aircraft, an airplane that, through controlled dives, can simulate zero gravity in its bay. The sensation has landed the research facility the dubious nickname of "vomit comet."

The team members, who met each other face-to-face for the first time as they learned their project had been selected, will begin conducting preliminary research in the next few weeks.

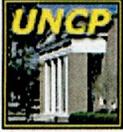
Team advisors say the students' research could prove valuable to those working at NASA on shuttle missions and international space station work. Their Aqueous Diffusion Rates (ADR) project could inform their work when mixing liquids in low gravity environments.

Both UNCP and UNC Charlotte conducted competitive selection processes for the student teams and released their final rosters Oct. 4.

NASA's KC-135A Reduced Gravity Undergraduate Research Program is designed to inspire student interest in science, engineering and technology. For more information on the 2003 KC-135 program, visit their website at www.microgravity.nasa.gov.

Contributions to The Weightless Lumbees' project may be made to the UNCP Foundation by calling 910.521.6252. For information, contact tim.ritter@uncp.edu.

[Return to University Newswire](#)



Fax: 910.521.6694
Email: scott.bigelow@uncp.edu

What's happening ...

12

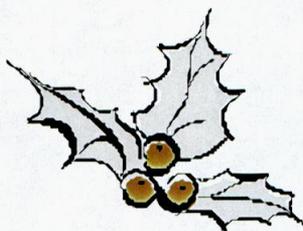
Spotlight on Research
4 p.m.
126 Fretwell

14

Winter Commencement
10 a.m. and 3 p.m.
Halton Arena

22

The Christmas Shoes Tour,
musical
7:30 p.m.
Halton Arena



For up-to-date
Campus Events
information and
further details about
the events listed above,
visit www.uncc.edu/campusevents
or call the 24-hour
events hotline at
Ext. 4900



NASA astronauts test zero gravity in the KC-135A aircraft.

Team of UNC Charlotte and UNC Pembroke students to work aboard NASA's KC-135A

Just days after sending its first American Indian astronaut to space, the National Aeronautics and Space Administration (NASA) has selected a team of Lumbee students from UNC Charlotte and UNC Pembroke to participate in a highly competitive research program that will soon have them floating in zero gravity themselves.

The team's research proposal was one of 72 selected — during a blind screening process — from the more than 300 submitted by universities nationwide for NASA's KC-135A Reduced Gravity Undergraduate Research Program. They will join teams from MIT, Harvard, Purdue and other universities in testing their research in zero gravity.

The students, all of whom are members of the Lumbee Tribe of North Carolina, received news of their selection last Friday at a meeting on campus. The "Weightless Lumbees" team started work in October, preparing their research proposals using e-mail and videoconferencing labs at the two campuses.

The team will fly to Houston, Texas, to spend April 10-19 researching how liquids diffuse in a reduced gravity environment. To do so, the students — some of whom have previously never flown in a commercial aircraft — will be flying in NASA's KC-135A aircraft, an airplane that through controlled dives can simulate zero-gravity in its bay. The sensation has landed the research facility the dubious nickname of "vomit comet."

The team members, who met each other face-to-face for the first time as they learned their project had been selected, will begin conducting preliminary research in the next few weeks.

Both institutions conducted competitive selection processes for the student teams and released their final rosters Oct. 4. Team members at UNC Charlotte are Robbie Goins, Ginger Moody and Kiel Locklear. They are advised by Howard Phillips of electrical and computer engineering and Kathy Nunnally, an associate director of the learning center, and assisted by Teresa Williams, an international analyst at NASA on loan to the North Carolina Space Grant Consortium.

NASA's KC-135A Reduced Gravity Undergraduate Research Program is designed to inspire student interest in science, engineering and technology. For more information on the 2003 KC-135 program, visit their Web site at www.microgravity.nasa.gov or contact Teresa Williams at Ext. 2055.

Granular Physics Group Travels to NASA

A GROUP OF EIGHT TU STUDENTS, A PHYSICS professor, and a journalist from KJRH Channel 2 took an experiment to NASA in Houston, Texas, for 10 days in March 2003. The purpose of the experiment was to study the behavior of a granular gas in a zero gravity environment. In order to approximate a zero gravity environment, five of the students flew with the experiment onboard NASA's KC135 low gravity airplane.

The experiment was designed and built on the TU campus by students. Each student was responsible for one component of the experimental apparatus. The apparatus was designed to shake a box made up of eight sapphire cubes containing brass ball bearings. Three video cameras and eight pressure sensors gathered the data.

There were two flights on two consecutive days. Each flight lasted about an hour and a half. The plane was flown to the Gulf of Mexico where the pilots flew the plane in a series of parabolic paths. During a portion of each parabolic path the students experienced a zero gravity environment. Altogether they flew forty-



two parabolic paths. Each parabolic path lasted about a minute and a half, during which time they experienced about 25 seconds of zero gravity.

In order to participate in the flights, the students had to undergo physiological, sociological, and safety training. They were put in a hyperbaric chamber, or pressure chamber, which simulated conditions at 45,000 feet. This was done to gauge their reactions to hypoxia, or oxygen deficiency. Onboard the flight, the students operated the experiment and simultaneously coped with weightlessness. The experiment was operated by pressing buttons that were connected to a computer. The computer controlled how fast and how hard the box would be shaken.

While in Houston, the TU students took tours of NASA, met students from other schools, and

attended a lecture given by world-renowned physicist Stephen Hawking.

The experiment is slated next to run aboard a NASA space shuttle.



UNIVERSITY OF KENTUCKY

An Equal Opportunity University

JACK LEIFER, Ph.D., PE
*Assistant Professor of Mechanical
Engineering*

**College of Engineering
Extended Campus Programs**

*4810 Alben Barkley Drive
PO Box 7380
Paducah, KY 42002-7380
(270) 534-3115*

Fax (270) 534-6292

*E-mail jleifer@engr.uky.edu
www.engr.uky.edu*

College of Engineering
Extended Campus Programs in Paducah
P O Box 7380
Paducah, Kentucky 42002-7380

Deanna -

We presented a technical paper based on our 2003 flight at the AIAA Gossamer Structures Forum on 4/20/04. Three team members, including the 2003 & 2004 team leaders were included as Co-authors. Note the RGSFOP was included in the acknowledgements, as well as the body of the paper.

Please let me know if you need this in electronic form, also.

Best Regards,
Jack Leiker

Zero- and One-g Comparison of Ripple Amplitude in Single-Curved Parabolic Membranes using Photogrammetry

Christopher G Meyer* and Jack Leifer†
University of Kentucky, Paducah, KY, 42002-7380, USA

Bernardo C Lopez‡
Jet Propulsion Laboratory, Pasadena, CA, 91109, USA

and

David C Jones§ and Boyd C Caddell**
University of Kentucky, Paducah, KY, 42002-7380, USA

This experiment was designed to quantify the effects of gravity and boundary support conditions on a scale model of an orbiting, singly-curved parabolic thin-film reflector planned for deployment by the end of this decade. As it is well-known that membrane elements supported in tension are prone to out-of-plane rippling, a 1-m scale model of the parabolic reflector support system was constructed and tested on NASA's KC-135A "Weightless Wonder" microgravity aircraft. Two membranes were tested: a fabric-backed metallized membrane (76.2 μm Nylon, 38.1 μm Mylar, 0.1 μm Al) and a 127 μm metallized Kapton membrane. Each membrane was placed in the fixture, and tensioned using edge clamps that maintained the desired parabolic profile at the membrane boundaries. Targets for tracking the full-field surface deflection were provided by about 7000 2-mm dots placed on the membrane surface. In flight, the membrane configuration was monitored by four digital cameras mounted in the test enclosure. Wide-angle lenses were used on the cameras, as they had to be mounted quite close to the membrane due to restrictions imposed by the size of the aircraft. Using photogrammetry, the high-resolution digital images taken in-flight (at zero-g conditions) and on the ground (at one-g) were processed, and the three-dimensional location of each target visible in at least three images was calculated. It was found that for the same boundary condition, surface rippling under zero-g conditions was less pronounced than at one-g conditions for the fabric-backed Mylar test article.

Nomenclature

g	= acceleration of gravity
p	= focal length
t	= membrane thickness
x	= linear component of membrane span, aligned with the tangent to the parabola's vertex
x'	= linear component of membrane span, passes through top and bottom edges of parabolic membrane
y	= height of membrane surface (perpendicular to x)
y'	= membrane coordinate (perpendicular to x')

* Undergraduate Assistant Current Address Swales Aerospace, NASA Langley Research Center, Structural Dynamic Branch, Bldg 1293B, MS 230, Hampton, VA 23681, AIAA Student Member

† Assistant Professor, Extended Campus Programs, Department of Mechanical Engineering, PO Box 7380, AIAA Member

‡ Mech. Sys Engr. and Research Division, 4800 Oak Grove Drive/MS 299-100, AIAA Member

§ Undergraduate Assistant, Extended Campus Programs, Department of Mechanical Engineering, PO Box 7380

** Undergraduate Assistant, Extended Campus Programs, Department of Mechanical Engineering, PO Box 7380

z = cylindrical length of membrane

I. Introduction

THIS experiment was designed to quantify the effects of gravity and boundary support conditions on a scale model of an orbiting Precipitation Radar Antenna.^{1,2} This thin-film structure, under joint development by JPL (Pasadena, CA) and ILC Dover (Frederica, DE) for deployment by the end of this decade, will use a singly-curved parabolic profile conforming to

$$y = x^2/4p \quad (1)$$

where the focal length $p = 1.89 \text{ m}$, linear projected span $x = 5.3 \text{ m}$ measured from the apex, and cylindrical length $z = 5.3 \text{ m}$ (Fig. 1). The structure will be deployed and maintained in its final shape on-orbit by an integrated support structure also under development. As currently envisioned, the antenna will orbit at altitudes ranging between 400 and 750 km, and it will operate at simultaneous scanning frequencies of 14 and 35 GHz.

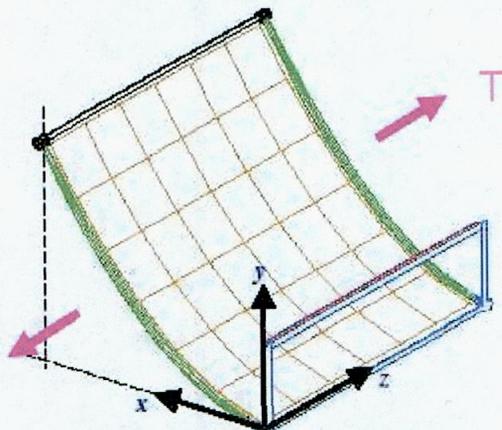


Figure 1: Schematic Representation of half-parabolic cylinder design, with tension (T) applied along the z direction (from Lin et al²). Note that here, the x-axis is aligned with a line tangent to the parabola's vertex.

One effect on membranes that has here-to-fore not been fully quantified is the role gravity plays in ripple amplitude. While extensive ground testing of scale-model Gossamer structures in one-g has been performed in both vacuum and air, there are no ground-based methods of testing in a zero-g environment. Zero-g testing of scale model structures could be performed on board the Space Station, however numerous factors render that option prohibitive. Placing experimental apparatus in a free-falling reference frame, however, simulates a zero-g environment, and can therefore allow the effects of gravity on a system to be determined.

A free-falling experimental environment is available aboard NASA's KC-135A microgravity airplane, also known as the "Weightless Wonder." Flying in a parabolic trajectory, the aircraft is placed into a controlled free fall near its peak altitude that provides about 25 seconds of microgravity relative to its fuselage (Fig. 2). These periods of microgravity are interspersed with 40-

In order to achieve an areal mass density of less than 2 kg/m^2 , the parabolic reflector is to be fabricated from 1 mil metallized KaptonTM, and its RMS surface accuracy must be held below 0.17 mm to maintain its desired beam characteristics.^{1,2} However, it is well known that membrane elements supported in tension are prone to out-of-plane rippling. "Rippling" here refers to the fully-reversible, or elastic, out-of-plane deformation of a membrane that is also called "wrinkling." However, the authors prefer to reserve the term "wrinkle" for irreversible (plastic) out-of-plane deformations that are permanently set into the membrane material. Numerical studies and experimental ground tests have shown that elastic surface rippling of a membrane depends on support conditions, and can exceed the RMS requirement specified above by over an order of magnitude.²⁻⁸



Figure 2: NASA's KC-135A "Weightless Wonder" as it approaches the top of its parabolic trajectory (from NASA Reduced Gravity website[†]).

^{††} <http://zerog.jsc.nasa.gov>

second periods of 1.8 g conditions that take place near the bottom of its trajectory, as the KC-135A pulls out of its free fall. Used both for astronaut training and scientific experiments, each flight of the KC-135A provides about thirty short periods of near-zero gravity (Fig. 3).

II. Test Article and Installation

A test plan incorporating a scale model of the precipitation membrane under development was submitted to the NASA Reduced Gravity Program by a group of undergraduate students at the University of Kentucky Extended Campus at Paducah. After acceptance into the program, a test fixture was designed and constructed at JPL, in order to accommodate weight and size restrictions imposed by the interior dimensions of the KC-135A. The fixture accommodated a truncated half-scale model of the full size membrane, with $p = 0.9275\text{ m}$, $x = 1.27\text{ m}$, and $z = 1.00\text{ m}$. The test membrane was clamped into the fixture using two cork-lined grips that both maintained the intended parabolic shape at the membrane edges and allowed tension (T) to be applied in the z -direction as shown in Fig. 1.

Figure 4 provides a full view of the JPL test article and fixture shown mounted in the frame assembled at the University of Kentucky. The exterior dimensions of the frame were designed to fit into the 1.524 X 1.524 X 0.914 m test volume allowed aboard the KC-135A. Tension was maintained by a set of cantilevered flexors shown at the top and bottom-left sides of the membrane test fixture. The membrane was mounted so that the fixed end of each flexor was located to the left of the membrane's left edge, as shown schematically in Fig. 5. This maintained the membrane in a state of tension.

Rippling in the membrane surface was controlled by manipulating the set screws shown in Figs. 5 and 6. Tightening the set screws decreased the tension in the membrane by increasing the z -position of the top and/or bottom of the left membrane clamp, which simultaneously increased the deflection of the flexors. After a minimally-rippled state, corresponding to a low uniaxial tension, was attained in the membrane by displacing the clamp in the positive z -direction, the dial gauges shown adjacent to the screws were set to zero. Additional rippling was then induced in the membrane by slightly adjusting the position and angle of the left clamp using the set screws. Positive gauge readings were obtained by loosening the set screws; this caused the flexors to pull the membrane clamp to the left, and

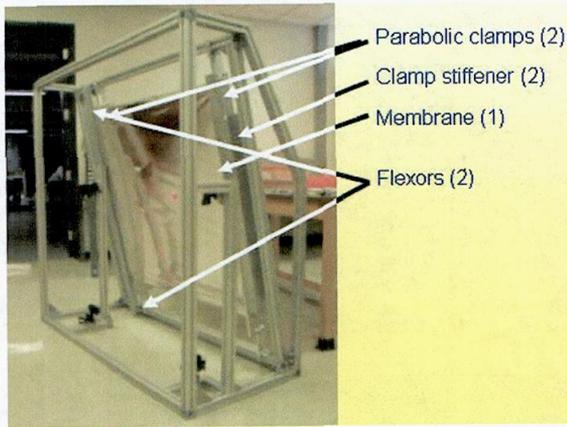


Figure 4: Overview of parabolic membrane, test fixture, and frame. Note the waviness in the reflected image that indicates rippling.



Figure 3: University of Kentucky undergraduates Boyd Caddell (floating) and Chris Meyer performing experiment in zero-g conditions aboard the KC-135A (from NASA Reduced Gravity website^{††}).

had the effect of increasing tension in the membrane. All ripples induced using this technique were reversible, as they could be eliminated by returning the set screws to their original positions, signified by a zero-deflection reading on each of the dial gauges. Maximum membrane tension was obtained by completely loosening the set screws, and was provided by the restoring force of the flexors.

Full-field deflection measurement of the membrane surface was obtained through the use of photogrammetry, a method by which three-dimensional geometry is reconstructed using a series of two-dimensional images taken from different locations around the test article. Photogrammetric techniques have been applied to the measurement of Gossamer structures by various

^{††} <http://zerog.jsc.nasa.gov>

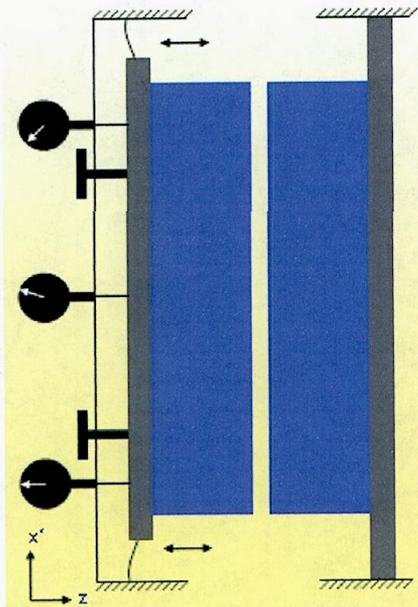


Figure 5: Schematic representation of the membrane, tensioning flexors, set screws and dial gauges. The vertical distance between each gauge measurement point was 43 cm. Note that in this figure, the x' -axis has been oriented along the direction of the tilted membrane clamp.

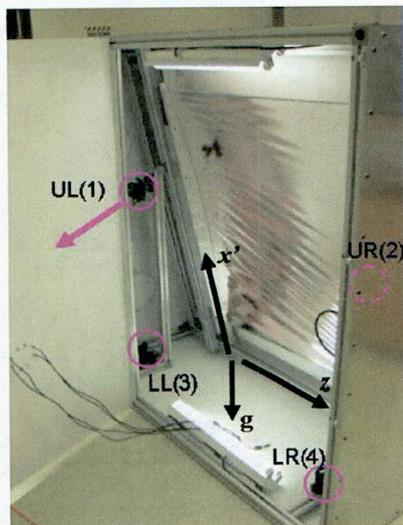


Figure 7: Experimental setup configuration showing position of cameras (indicated by circles), membrane, lighting and orientation of coordinate axes. Note that camera 1 (upper left) was relocated to the enclosure door prior to the experiment.

researchers in the past few years using both fixed and projected targets.⁹⁻¹² A few of the 7000, 2-3 mm fixed targets stenciled on the membrane surface tested in this study are visible in Fig. 6.

Four 5.0 Megapixel “prosumer” grade digital cameras were installed in the membrane enclosure, and used to take the images used for the photogrammetric analysis. In photogrammetry, best results are obtained when there is a 90 degree angle of separation between each of the cameras used, which generally indicates that cameras be positioned at each corner of a test article. However, due to the close proximity of the cameras to the test article in this case, locations at the mid-right side and bottom corners of the membrane, as well as one directly in front of the membrane (mounted through the door) were chosen (Fig. 7).

Wide-angle lens extensions were used to maximize the field of view for each camera. The cameras were mounted to the enclosure using universal tripod connectors. In order to reduce the effect of air currents on the membrane deflection, sheet metal sides were added to the box, with access provided via a hinged front door. Reflections on the membrane from within the box were minimized by painting the interior white, and enclosing the body of the cameras within white hoods. Lighting was provided by



Figure 6: Photograph of dial gauge and set screw used to adjust the angle of the membrane clamp.

mounting florescent tubes on the interior of the enclosure. Images of the membrane were taken simultaneously via remote electronic camera triggers, and adjustments to the membrane clamp were made through openings on the left side of the enclosure. The fully-assembled test structure, showing the adjustment openings located on the left side as well as the door-mounted camera, is visible in Fig. 3. During each zero-g period, the thick foam pad shown between the test structure and the cabin floor was used to reduce the transmission of engine vibration that could have caused blurring of the test article photographs.

III. Experimental Procedure

Using the experimental setup described in the previous section, the rippling of two membranes was

Table 1: Properties of membranes tested

	Nylon-backed Mylar (with Al metallization)	Al-backed Kapton
Thickness, t (μm)	Nylon layer: 76.2 Mylar layer: 38.1 Al metallization: 0.1	127
E (psi)	Not available	370000
Areal density (kg/m^2)	0.066	0.181

Table 2: Predefined gauge settings that determined orientation of membrane support clamp with respect to the x' axis. Indicated angular rotation (calculated using gauge readings) was clockwise.

Setting	Bottom Gauge [mil]	Middle Gauge [mil]	Top Gauge [mil]	Rotation angle
1	0	0	0	0
2	120	80	40	0.271
3	30	15	0	0.102
4	60	30	0	0.203
5	90	45	0	0.305
6	120	62	4	0.393
7	120	65	10	0.372
8	120	70	20	0.338
9	120	75	30	0.305
10	120	80	40	0.271
11	180	140	100	0.271
12	140	90	40	0.338
13	150	95	40	0.372
14	165	105	45	0.406
15	180	110	40	0.474
16	180	117.5	55	0.423
17	180	125	70	0.372
18	180	132.5	85	0.322
19	180	140	100	0.271
20	120	80	40	0.271
21	0	0	0	0

disk drive. Although four cameras were installed in the membrane enclosure, the trigger controlling camera 4 (located on the lower-right side of the membrane) failed almost immediately after take-off of the first flight. This trigger could not be replaced before the second zero-g flight, although the problem was resolved prior to the second set of ground experiments. As a result, both sets of ground tests provided four images per membrane setting, while both sets of flight experiments provided only three images each.

investigated in both zero- and one-g. The membrane was installed in the enclosure as shown in Fig. 7, with the x' -axis tilted forward by 12.4 degrees with respect to the vertical. This particular tilted orientation was chosen so that the membrane enclosure would fit into the space provided within the KC-135A cabin. Note that this installation angle determined the orientation of the gravity vector with respect to the membrane.

The membranes evaluated in this set of tests included a nylon-backed, Al-metallized Mylar, and an Al-backed Kapton (Table 1). Two sets of images were taken for each membrane tested: a ground series at one-g and a flight series at zero-g. After a membrane was installed in the test fixture, a single zero point was chosen by adjusting the set screws to minimize its surface rippling in the one-g environment. The dial gauges were then set to zero. This zero setting was not changed, nor was the membrane removed from the clamps, until both the ground and in-flight measurements were completed. A standardized array of gauge settings is shown in Table 2. A positive gauge reading in Table 2 indicates a support displacement in the **negative** z direction at the gauge location (as indicated in Fig. 5). This means that Setting 1 represented a minimally-tensioned membrane, and that higher tensions were selected along the bottom of the membrane, as indicated by the higher gauge settings. A surface measurement for a given membrane support condition was obtained by first rotating each set screw until the predetermined gauge readings were obtained, and then triggering the cameras to create simultaneous images of the membrane from each vantage point. The gauge adjustment procedure was standardized to ensure that each membrane was subjected to the same loads in the same sequence. Several membrane settings (e.g. 1 and 21; 2, 10 and 20) were repeated, to permit testing for hysteresis.

The sequence of experiments (ground/fabric backed Mylar; flight/fabric backed Mylar; flight/Kapton; ground/Kapton) was determined by the KC-135A flight schedule. While the initial plan was to measure each membrane on the ground (one-g) immediately prior to its respective flight, there was no time to do so prior to the second flight (Kapton membrane). As a result, the sequence for the Kapton membrane was reversed, with the ground experiment performed immediately after the in-flight zero-g experiment was performed.

After each edge configuration was set using the set screws and the dial gauges, a set of images was taken by triggering the cameras simultaneously. Images were stored on 1 GByte microdrives located in each camera; this allowed up to 65 15-MByte images to be stored on each camera between downloads to an external computer hard

IV. Results and Discussion

A. Nylon-backed Mylar Membrane

The nylon-backed Mylar membrane was the first membrane tested aboard the KC-135A. While the ground testing sequence (one-g data) was taken prior to the flight using all four cameras, only cameras 1-3 were available in flight for the zero-g images, due to the failure of triggering mechanism on camera 4. Although images of the membrane were obtained at both zero- and one-g for all configurations listed in Table 2, evaluation of only four sets have been completed thus-far: ground and flight images for setting 1 (the "zero" state determined for minimum surface rippling), and ground and flight images for setting 5.

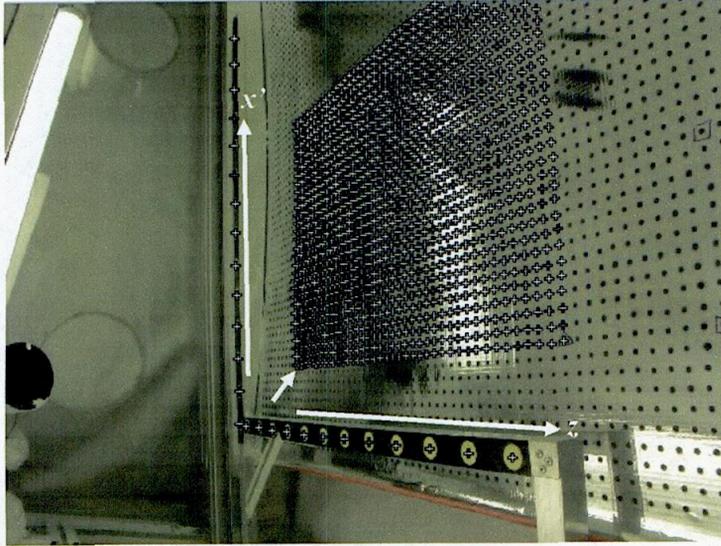


Figure 8: View of fabric-backed Kapton membrane from camera 4. The area highlighted by the plus (+) symbols was reconstructed using photogrammetry. Note the lens of camera 3, located in the bottom left corner, and the external reference frame installed around the left and bottom sides of the membrane. The dark patches located to the right side of the highlighted region indicated low-contrast areas where target identification was difficult. x' and z directions, as well as $(0,0,0)$ point for the contour plots, indicated by arrows.

Due to the loss of camera 4 for the duration of the zero-g flights, the three-dimensional contour of the entire membrane surface could not be reconstructed. Other issues, including reflections and shadows that reduced the contrast between the targets and the background in certain regions of the membrane, also caused difficulties with surface contour reconstruction, even for the ground experiments that utilized all four cameras. As a result, the reconstructed region of the nylon/Mylar membrane was limited to a central portion of each membrane (Fig. 8), as indicated by the region demarcated by the plus (+) symbols. The linear dimensions of the reconstructed area (projected into the x' - z axis), were approximately 0.37 m high by 0.50 m wide. In addition to the demarcated targets on the membrane surface, targets located on a rigid

reference frame, with axes parallel to the x' and z directions, were also identified and located within each image. The targets on this frame were used to properly orient and scale the optical reconstruction of the membrane surface.

Quantitative analysis of each set of images was completed using PhotoModeler 5.0, a commercial photogrammetry software package. Through iterative triangulation calculations, the software computed the 3D location of each target, as well as the location of each camera. Each set of points was reported in Cartesian coordinates (x' - y' - z'), and was graphed using a commercial contouring package. Figures 9-12 show the reconstructed contours of the nylon/Mylar membrane at test configuration 1 (both zero- and one-g), and of configuration 5 (both zero- and one-g), respectively. Note that this is an exaggerated view; the actual amplitudes of the ripples across the membrane surface are much smaller than shown. The $(0,0,0)$ point was defined at the same place on each plot, the lower-left corner of the highlighted area shown in Fig. 8. This point was determined through the use of fiducial marks (squares and triangles) applied around certain targets in a grid-shaped pattern.

Qualitatively, it seems that membrane rippling amplitude decreased when gravity was removed, and that rippling amplitude also decreased when membrane tension was increased. This is seen more clearly in Figs. 13 and 14, which respectively show the deflections through a membrane cross-section corresponding to $x'=0.37$ and $z=0.50$ for configurations 1 and 5.

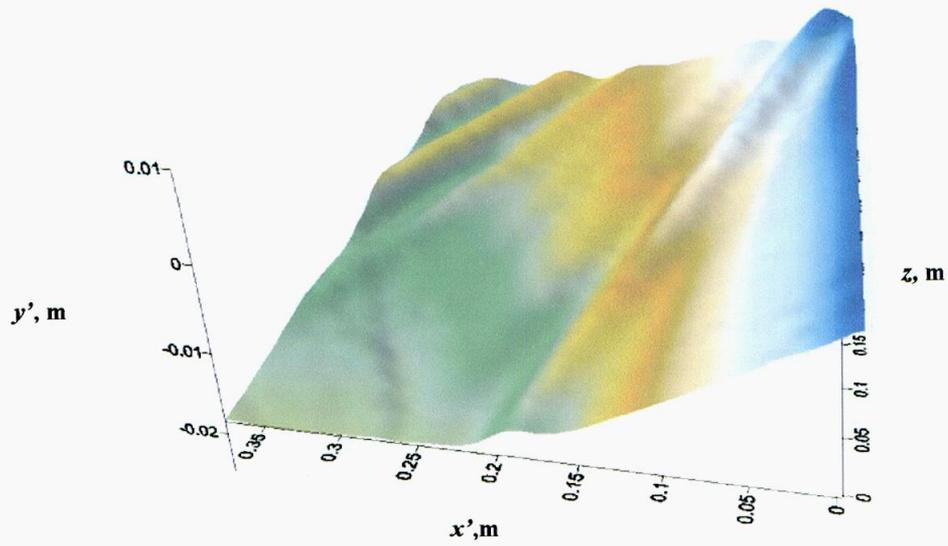


Figure 9: Nylon/Mylar membrane surface contour for boundary setting configuration 1, flight experiment (zero-g).

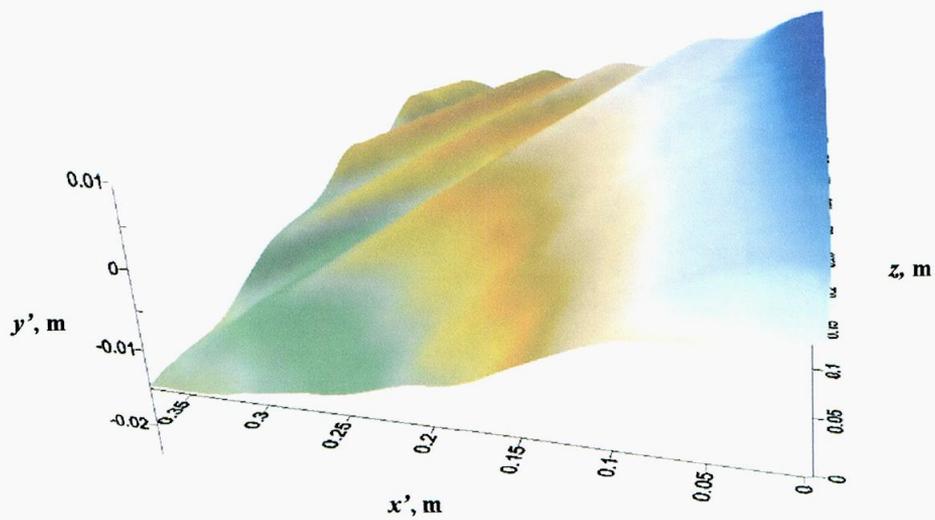


Figure 10: Nylon/Mylar membrane surface contour for boundary setting configuration 1, ground experiment (one-g).

Acknowledgments

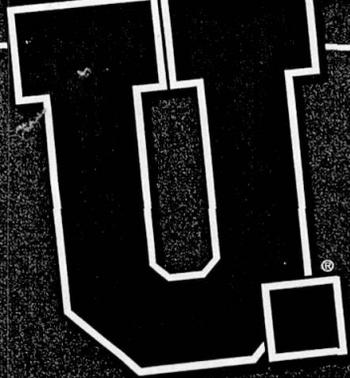
The authors would like to thank the Kentucky Space Grant Consortium, the UK Vice President for Research, the NASA Faculty Fellowship Program, and the UK Extended Campus Program at Paducah for financial assistance, and Sally Smith-Clemens and William Carp of Olympus USA for donating their time and one of the cameras used for this project. Thanks also to the Paducah Weightless Wildcats (PaWWs) ground-support team in Houston (Kara Adair, Josh Medley, Jason Perry and Christian Musselman), and PaWWs flight crew members Justin Hastie, Ben Morgan, and Boyd Caddell. Finally, thanks to Jon Black of NASA/Langley Research Center, Joe Blandino of James Madison University, and Carl Knoll of ILC-Dover for their technical advice. Access to the KC-135A was provided through the NASA Reduced Gravity Student Flight Opportunities Program (RGSFOP).

References

- ¹Im, E., Durden, S.L., Kakar, R. K., Kummerow, C.D., and Smith, E.A., "The Next Generation of Spaceborne Rain Radars: Science Rationales and Technology Status," Third Symposium on Microwave Remote Sensing of the Atmosphere and Environment, International Society for Optical Engineering (SPIE), Bellingham, WA, 2002.
- ²Lin, J.K., Sapna, G.H. III, Scarborough, S.E., and Lopez, B.C., "Advanced Precipitation Radar Antenna Singly Curved Parabolic Antenna Reflector Development," 4th Gossamer Spacecraft Forum, AIAA, Washington, DC, 2003.
- ³Blandino, J.R., Johnston, J.D. and Dharamsi, U.K., "Corner Wrinkling of a Square Membrane due to Symmetric Mechanical Loads," *AIAA Journal of Spacecraft and Rockets*, September 2002.
- ⁴Wong, Y.W. and Pellegrino, S., "Computation of Wrinkle Amplitudes in Thin Membranes," 3rd Gossamer Spacecraft Forum, AIAA, Washington, DC, 2002.
- ⁵Wong, Y.W., and Pellegrino, S., "Amplitude of Wrinkles in Thin Membranes," in *New Approaches to Structural Mechanics, Shells and Biological Structures*, H. Drew and S. Pellegrino, ed., Kluwer Academic Publishers, Dordrecht, NL, 2002.
- ⁶Jenkins, C.H., Haugen, F. and Spicher, W.H., "Experimental Measurement of Wrinkling in Membranes Undergoing Planar Deformation," *Experimental Mechanics*, Vol. 38, No. 2, 1998, pp. 147 - 152.
- ⁷Leifer, J. and Belvin, W. K., "Prediction of Wrinkle Amplitudes in Thin Film Membranes via Finite Element Modeling," 4th Gossamer Spacecraft Forum, AIAA, Washington, DC, 2003.
- ⁸Black, J.T., Leifer, J., DeMoss, J.A., Walker, E.N., Belvin, W.K., and Smith, S.W., "Experimental and Numerical Correlation of Gravity Sag in Solar Sail Quality Membranes," 5th Gossamer Spacecraft Forum, AIAA, Washington, DC, 2004.
- ⁹Pappa, R.S., Giersch, L.R., Quagliaroli, J.M., "Photogrammetry of a 5m Inflatable Space Antenna with Consumer Digital Cameras," NASA/TM-2000-210627, 2000.
- ¹⁰Pappa, R.S., et al., "Photogrammetry Methodology Development for Gossamer Spacecraft Structures," 3rd Gossamer Spacecraft Forum, AIAA, Washington, DC, 2002.
- ¹¹Leifer, J., Black, J., Belvin, W. K., and Behun, V., "Design and Evaluation of Shear Compliant Borders for Thin Film Membrane Structures," 4th Gossamer Spacecraft Forum, AIAA, Washington, DC, 2003.
- ¹²Pappa, R.S., Black, J.T., Blandino, J.R., Jones, T.W., Danehy, P.M., and Dorrington, A.A., "Dot-Projection Photogrammetry and Videogrammetry of Gossamer Space Structures," NASA/TM-2003-212146, 2003.

FALL 2003

THE NATIONAL COLLEGE



Magazine

Anniversary Issue



years

Campus Technology Music Fashion Travel

TAKE A WALK ON THE WEIGHTLESS SIDE

By: John Carrieri



The Embry-Riddle Team

It was a hot and sunny day as I approached the hangar at Ellington Field in Houston. After multiple security checks, a credential check and a complete flight physical, I was finally allowed entrance into the facility that houses NASA's KC-135 and WB-57 zero gravity aircraft.

There were student teams from several universities assembled for the initial briefing on NASA's microgravity program. Each team had successfully submitted their experiment for the program and had been selected as a winner to actually test in zero gravity.

I didn't have to look far to find my team from Embry-Riddle University because they all had freshly shaved heads. Let's just say their five bald heads were fairly easy to identify. The Embry-Riddle team consisted of leader Alexander Potter, Felix Chung, Matthew Link, Phillip Midler, and Martin Potter. While one could mistake their baldness for an eccentric take on team spirit, it was actually due to their experiment in which all were ready to sacrifice their hair for science. Their experiment is titled "Quantification of Intracranial Pressure Using Pulse-Phase Locked Loop Ultrasonic Technique: A Study in Gravitational Physiology." The intent of the experiment was to test the pressure and actual physical changes in the width of the human head without gravity. The goal was that their findings would help in understanding the effects that cause sickness in zero gravity environments.

All students were glued to the briefing out-

EMBRY-RIDDLE AERONAUTICAL UNIVERSITY

lining the next few weeks, which would inexorably change their lives. NASA administrators were very cordial but clearly laid out the rules which had zero room for misconduct or variance. Donn Sickorez, the University Affairs Officer and John Yaniec, the Lead KC-135 Test Director explained to the students that NASA expected professionalism by each student personally, and in the testing of their experiments. Anyone or any project that couldn't meet that standard, would be staying on the ground.

Besides Ellington Field, the students got to visit "Mission Control" at the Johnson Space Center and conduct their physiological training there and at the NBL (Neutral Buoyancy Lab). Part of the physiological training at the NBL was to pass the chamber test. The "Chamber" is a pressurized cabin chamber that can simulate altitude ascent and descent along with varying pressures.

We had plenty of NASA personnel both in and outside the Chamber monitoring the students, standing only seconds away with any help needed. After "flying" the chamber up to 25,000 feet, we were all asked to take off our oxygen masks to experience first hand the affects of hypoxia, which is a state of oxygen deficiency to the blood, tissues and cells. Hypoxia has different effects on different people, but will ultimately lead to unconsciousness. The TUC or "Time of Useful Consciousness" depends on the altitude. At our altitude of Flight level 25,000 feet, the TUC was 3-5 minutes. As we approached the 4-minute mark, our heroes were noticeably going downhill. Some students lips and or fingers changed to a bluish hue. Other tried to concentrate on a worksheet that was given out to spell their names or answer other trivia. Giggling started to permeate the room as teammates started to laugh at each others actions. Felix, one of



The Bald Perspective

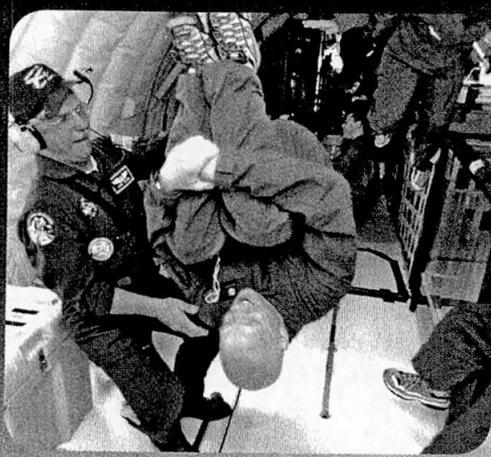
team, started to push back at his joking mates, only he was moving in sloooowww motion. We were then asked to turn back on our oxygen, which was part of the test. Felix was already in a downward spiral as his head started to slump. Our NASA chamber leader immediately helped him turn it on and we all got to witness first hand what the lack of oxygen could do to you. I certainly couldn't say much, as after 4 minutes I tried to list the presidents backwards and couldn't get past Bush. The lesson was obvious, and we all made sure we knew where the emergency oxygen equipment was and how to put in on when we finally got on the KC-135.

When our scheduled flight day finally came, everyone was ecstatic while perhaps a bit nervous. In order for the KC-135 to create brief 30 second intervals of weightlessness, the aircraft flies parabolas climbing at a 45 degree angle and then diving back down at a 45 degree angle after reaching the crescendo of the parabola while at times reaching Mach .9 or 9/10th the speed of sound. In addition to simulating "zero-g" the KC-135 can also simulate gravity in between zero and 1g. It did this by flying one parabola at 1/6 g or lunar gravity, and 1 parabola at 1/3 g or same gravity of Mars.

Our first sensation of weightlessness released us from the chains of gravity as John Yaniec belted out, "Over the Top." It's hard to describe the feeling as your body floats carelessly and aimlessly through the air. All gravitational realities

Preparing for the "Chamber"





Zero-g Roll



from your every waking moment on earth are shattered giving you with a peaceful feeling that leaves you wanting for more.

Of course, the initial order of business for the students was to conduct their experiments and



Zero-g 5 person pushup

record the data collected during these 30 second intervals of zero-g. In between the parabolas, you also quickly learned to plant or at least aim your feet at the ground as gravity not only returned but doubled to 2g's as the plane dipped down at the bottom of the preceding parabola and thundered back up at a 45 degree angle. The speed and the parabolic trajectory of the plane has also given it the nick name over the years of the "Vomit Comet." All students are required to have two plastic bags in their front left and right pockets of their flight suit just in

Experiment setup



case. Fortunately, we were given appropriate medicine to counter these affects and our plane only had 1 "Kill" on it.

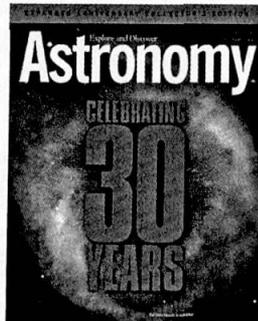
While I might be able to describe the "weightless wonder" as this plane is also known, it's best to see video and photos of the whole event.

Please log on to:

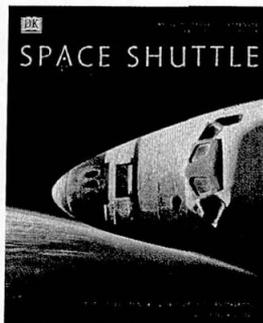
<http://www.colleges.com/majors/space.html> for video and hundreds of photos.

Also to learn more about the NASA microgravity program go to:

<http://microgravityuniversity.jsc.nasa.gov/>



For an excellent source about Astronomy get Astronomy Magazine or log on to: www.astronomy.com



For an excellent history of the Space Shuttle try DK publishing's Hard Back "Space Shuttle The first 20 Years" www.dk.com

Astronaut Briefing notes:



Colonel Mike Fink "Spanky"

We had the opportunity to speak with Astronauts about their job at NASA such as Colonel Mike Fink also known by his flight name "Spanky." "Spanky" graduated with an undergraduate degree from MIT and a graduate degree from Stanford.

U. How many astronauts are in the corps?
A. 146 (93 have had flight experience)

Quick Shuttle facts:

- 9 minutes into orbit and 45 for reentry
- 113 space shuttle flights
- 650 astronauts
- 2.5 million parts
- Triple redundancy on every onboard system

U. How is it working with the Russians?
A. It's a marriage, some days we love them and other days it's frustrating.

U. How important is military experience in Astronaut selection?
A. 50% are military 50% scientists

U. Is going to Mars justified?
A.

1. Don't have all of your eggs in one basket Colonize another planet in the event of a meteor wipeout
2. Life could be on Mars
3. Continuation of our aeronautic and engineering Science
4. Continuation of human exploration
5. New scientific breakthroughs

Engineering Excellence

The William States Lee College of Engineering Alumni Newsletter

spring 2003

NASA Project

Engineering students perform experiments in zero-gravity environment

A team of Lumbee students from UNC Charlotte's Lee College of Engineering and from UNC Pembroke got the chance to perform experiments in zero gravity this April on board NASA's KC-135A aircraft.

The students, who are all members of the Lumbee Tribe of North Carolina, started work in October preparing their research proposals. Their Aqueous Diffusion Rates (ADR) project centered around researching how liquids diffuse in a reduced gravity environment.

The KC-135A executes controlled dives that simulate zero-gravity in its bay. The UNC Charlotte team completed 19 parabolas in its first day of flying and 42 in its second.

Team member Kiel Locklear from the College of Engineering's Engineering Technology Department said they learned a lot between day one and two. "There were a few things we didn't count on," he said, "like how difficult it was to float over and turn the knobs to start the diffusion in the 20 seconds of weightlessness. But it was worth all the hard work to have such a rewarding experience."

Other members of the UNC Charlotte team were Robbie Goins of Engineering Technology and Ginger



The "Flying Lumbees" Team working in zero gravity on board the KC-135A.

Moody of Business Administration. They were advised by Dr. Howard Phillips of Electrical and Computer Engineering.

"It was a unique experience," Goins said. "There's nothing else like it anywhere, not even the fastest roller coaster."

NASA's KC-135A Reduced Gravity Undergraduate Research Program is designed to inspire student interest in science, engineering and technology.

Celebration of Student Achievement



Dean Bob Johnson presents the Electrical and Computer Engineering Outstanding Senior Award to Zoya Volynskaya. The Lee College of Engineering held its second annual Celebration of Student Achievement event on April 22. Other outstanding seniors recognized were Chris Reinbold of Civil Engineering, Susan Sain of Engineering Technology and Danny Stines of Mechanical Engineering.

Outstanding graduate students honored were Liane Morgan and Radha Swayampakala of Civil, Suriya Ashok Kumar of Electrical and Computer, and Yekaterina Zinchenko of Mechanical.

The Outstanding Student Organization Award went to the National Society of Black Engineers. The Most Improved Student Organization went to the National Society of Professional Engineers.

New program teaches leadership skills



Putting teamwork and leadership to the test.

To provide engineering students with an opportunity to learn what leadership is all about and to gain an understanding of their personal leadership qualities, the Lee College of Engineering has begun a Leadership Academy. The first group of 22 juniors and seniors is now halfway through the program.

Stephen Myers, Lee College's faculty associate for recruiting and advising, is the director of the Leadership Academy. The program started with an idea to, "Create an opportunity to develop leadership potential," Myers said. "That meant building basic leadership skills and also providing contact with community and industry leaders."

Students who were interested in participating in the Leadership Academy completed a two-stage selection process. The first stage was a written application including six short essay questions. The second stage was an interview by the selection committee.

"We wanted students from a variety of backgrounds," Myers said. "The first group of 22 includes traditional and nontraditional students, all of the engineering majors, people from seven different countries and many different personalities."

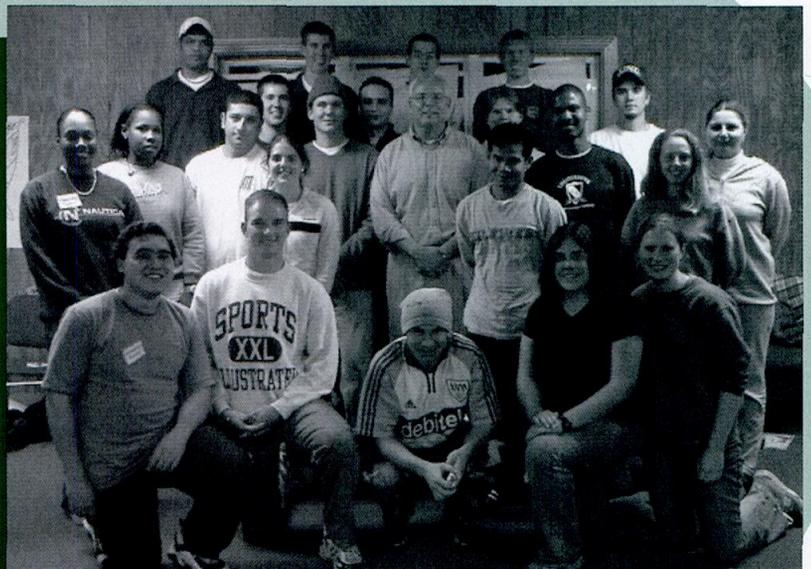
The entire program is comprised of four weekend sessions spread out over four semesters.

The first event was held in fall 2002 at Camp Thunderbird on Lake Wylie, SC.

The Leadership Academy is being funded by \$20,000 from Philip Morris USA and \$25,000 from the State of North Carolina. Philip Morris has been critical to the success of the Leadership Academy in numerous ways. A large portion of the content for the sessions has come from the Philip Morris leadership model and method of strategic planning. Linda Mays, a human resources expert from their Richmond office, actually came to Charlotte for a day to help design the program.

The first session was kicked off by Ed Tucker of Philip Morris USA (see story page 3). Tucker spoke about his path to leadership as well as the leadership model developed by Philip Morris. Mike Minter, captain of the defense for the Carolina Panthers, spoke as well. Minter has an engineering degree from the University of Nebraska and is heavily involved in the local community. The weekend also included a ropes course that focused on teamwork and group problem solving.

As Myers explains, "There were three primary objectives for the students over the course of the weekend. The first was to learn about themselves as leaders: their strengths and weaknesses, personal leadership style and impact on



The first class of the Lee College of Engineering Leadership Academy.



The “Weightless Lumbees” from UNC Charlotte and UNC Pembroke learn NASA has accepted their research proposal to test how liquids diffuse in reduced gravity. They will float in the space agency’s KC-135A aircraft in April.

UNC Charlotte and UNC Pembroke Lumbee students selected for NASA research program

NASA has selected a team of Lumbee students from UNC Charlotte and UNC Pembroke to participate in a highly competitive research program that will have them floating in zero gravity.

The team’s research proposal was one of 72 selected—in a blind screening process from the more than 300 submitted by universities nationwide for NASA’s KC-135A Reduced Gravity Undergraduate Research Program. They will join teams from MIT, Harvard, Purdue and other universities in testing their research in zero gravity.

The students, all of whom are members of the Lumbee Tribe of North Carolina, received news of their selection Dec. 6 at a meeting on the UNC Charlotte campus. The “Weightless Lumbees” started work in October, preparing their research proposals using e-mail and video-conferencing labs at the two campuses.

The team will fly to Houston to spend April 10-19 researching how liquids diffuse in a reduced gravity environment. To do so, the students—some of whom have previously never flown in a commercial aircraft—will be flying in NASA’s KC-135A aircraft, an airplane that through controlled dives can simulate zero-gravity in its bay. The sensation has landed the research facility the dubious nickname of “vomit comet.”

Both institutions conducted competitive selection processes for the student teams and released their final rosters Oct. 4. Team members at UNC Charlotte are Robbie Goins, Ginger Moody and Kiel Locklear. They are advised by Howard Phillips, professor of electrical and computer engineering, and Kathy Nunnally, an associate director of the university’s learning center, Tim Ritter, associate professor of physics at UNC Pembroke, advises the Pembroke team, which includes Mary Beth Brayboy, Toni Chagolla, April Oxendine and Joe Oxendine. Teresa Williams, an international analyst at NASA on loan to the North Carolina Space Grant Consortium is assisting the team.

fly



ng high

STUDENTS TAKE TO THE SKIES FOR SCIENCE

written by karen barbier

In their olive drab flight suits, Aileen and Megan Ebadat, Sonya Morgan and Carolyn Jessop look like pilots in training. But, as the saying goes, looks can be deceiving. The four UHCL students donned flight suits this summer when they were selected to participate in the KC-135 Reduced Gravity Student Flight Opportunities Program, which allowed them to ride and work on experiments in a weightless atmosphere.

“My initial interest in submitting a proposal came after I met some people who were involved in the KC-135 program, and they were pushing me to submit a proposal,” explains Aileen Ebadat, the older of the two Ebadat sisters and the leader of the KC-135 student team, Reflexions.

NASA started the Reduced Gravity Program in 1959 to investigate human and hardware reactions to operating in a weightless environment. The reduced gravity environment is obtained with a specially modified KC-135A turbojet transport, which flies parabolic arcs to produce weightless periods of 20 to 25 seconds.

Aileen, 20, has always been interested in biology, but she never considered becoming a doctor until she started taking college classes and excelling in them. Then she realized that, yes, she could become a doctor.

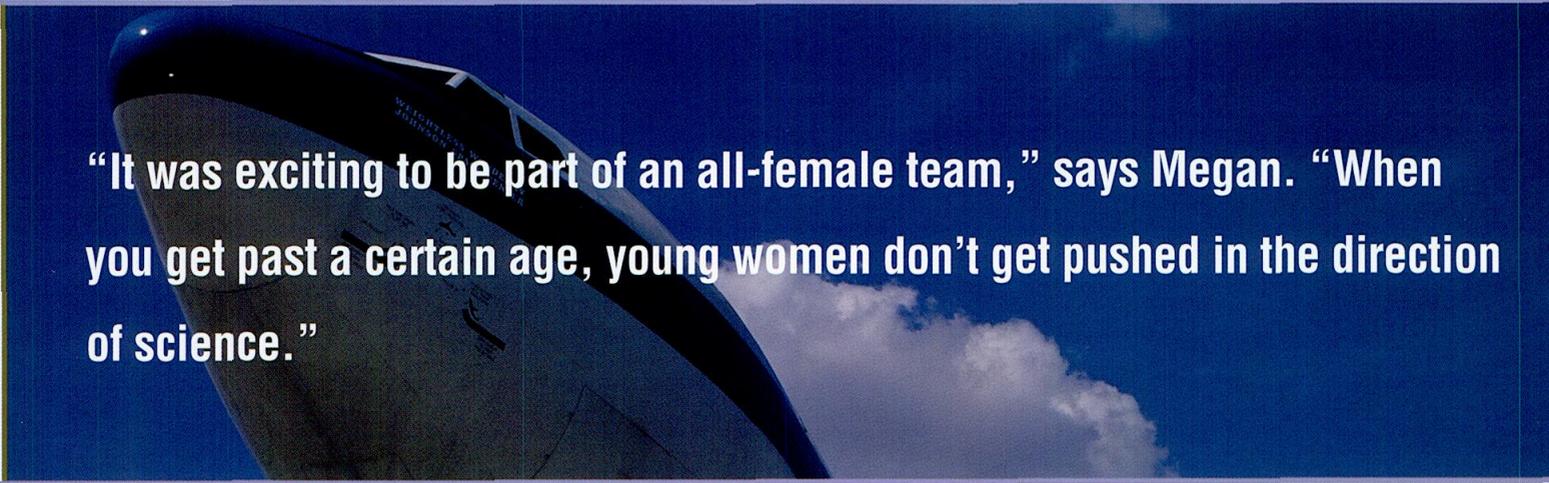
Aileen was intrigued by the idea of connecting her interest in biology with the opportunity of riding in the KC-135. After a lot of hard work, and multiple meetings with UHCL Associate Professor of Biology Richard Puzdrowski and Professor of Biology and Chemistry Ron Mills, Aileen discovered the right project – F.I.N.G.E.R. (Finger-flexion Investigation in Gravitationally Exempt Realm).

“When I researched the ideas that they (Puzdrowski and Mills) suggested, I came across this spinal cord excitability question,” says Aileen. It was fairly new and one particular experiment had just come off of the International Space Station. What an opportunity! I actually was able to contact this particular researcher, and he has been very supportive.”

In addition to the support from UHCL professors, the group also received help from San Jacinto College, especially the math and science faculty.

Finding her team, which according to the Reduced Gravity Student Flight Opportunities Program should include only a limited number of students needed to complete the experiment, was not too difficult for Aileen. Her 17-year-old sister, Megan, was a natural choice since she, too, has an interest in biology. Morgan, 30, joined the team when Aileen remembered her as “a good student and a real adventurer” from a physics class at San Jacinto College.

SISTER ACT: UHCL student Aileen Ebadat (l) led the Reflexions team that participated in the KC-135 Reduced Gravity Student Flight Opportunities Program operated by the NASA Johnson Space Center. Team members include Aileen's sister, Megan Ebadat, and sisters Sonya Morgan and Carolyn Jessop.



“It was exciting to be part of an all-female team,” says Megan. “When you get past a certain age, young women don’t get pushed in the direction of science.”

“Aileen contacted me and once I watched the video about the KC-135 program, I was hooked,” says Morgan.

The fourth member of the team was added when the 23-year-old Jessop, Morgan’s sister, expressed an interest.

“It was exciting to be part of an all-female team,” says Megan. “When you get past a certain age, young women don’t get pushed in the direction of science.”

The group’s F.I.N.G.E.R. hypothesis suggested that repeated exposure to zero gravity will cause a decrease in spinal cord excitability. The team says that if messages are being sent from the brain for an increase in muscular contractions and the excitability of the motor circuitry is reduced, exercise becomes more difficult for the astronauts as more effort is required to maintain the same level of exercise.

“Not only would this piece of information help us understand more of what really happens to the body in space, but it could also help make exercise more efficient for the astronauts by rethinking the exercise program that exists currently,” says Aileen.

Puzdrowski concurs and adds that although reflex-testing experiments completed aboard the International Space Station indicate there is a decrease in the excitability of the spinal cord motor circuitry within the first 24 hours of continuous weightlessness, no one knows exactly when the decrease in excitability begins.

“This decrease in spinal cord motor circuit excitability affects muscle performance and the response to stimuli,” explains Puzdrowski.

“Others have seen a decrease after 24 hours, but during our experiment, it was much more immediate,” says Aileen.

As for the actual experience of riding in the KC-135 “vomit comet,” all four of the team say the flight was something they will never forget.

“It was incredible; when you hit ‘two-gs,’ your stomach goes to your throat” says Morgan, who explained that all of the teams were divided with half going up on one flight and the other half going up in the next. Morgan flew with her sister, Jessop, while the Ebadat sisters rode together.

“They thought I would be the one that would be sick,” says Jessop. “But I actually enjoyed it and sat in the cockpit while landing.”

The team’s involvement with the KC-135 included several days of pre-flight training before their actual two-hour flight. But the end result was worth it, explains Aileen.

Each team is required to submit a report on their experiment to NASA.

“If it is considered outstanding, the astronauts will look at the report to see how it can help them,” adds Megan.

The team plans to finish their degrees and pursue careers in their respective fields, which includes medicine for Aileen, international business for Megan, dentistry for Morgan and finance for Jessop.

“I had never considered the possibility of going into aerospace medicine until I really got into this project and the NASA community,” says Aileen. “But now I’m saying, ‘where do I sign up?’”

away up, up and

While the Reduced Gravity Program has been around for a few years, the Reduced Gravity Student Flight Opportunities Program began in the early 1990s. Since that time, approximately 350 student teams and 1,700 student fliers from around the country have participated.

“They learn more with this project than anything they’ve seen in their entire lives,” says Donn Sickorez, Johnson Space Center education coordinator for the program. “Most of them never knew what it was like to write a proposal, budget, find funding, fly the experiment and then go out and talk about it.”

Sickorez adds that one recent participant wrote a letter to him that seems to sum it up.

“He wrote that it was an ‘unmatched opportunity to experience engineering,’” says Sickorez. “And that is exactly what it is. The students have had the classes and now they can put everything they’ve learned into practice.”

“We want them to be the next Nobel Prize winners.”