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Talk

SPRING 2009

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Message from the PI

Affordable Access to Space

There is no lack of entities seeking reliable, timely and affordable access to space, and the academic community is no exception. Students, researchers, and scientists at numerous universities and colleges across the nation have designed and built small payloads or satellites which have no place to go. SpaceTEC may have a partial solution and is working to secure access to an inventory of Super Loki rockets and develop a streamlined launch process.

Super Loki rockets are not capable of reaching orbit; however, they can reach altitudes of approximately 200,000 ft., well in excess of weather balloons, making them a logical step toward orbital flight. The miniaturization of circuits, components, and power sources, and utilization of off-the-shelf technology have enabled the development of small payloads as inexpensive technology test beds for developing future systems or subsystems and can be ideal candidates for the Super Loki.

The Super Loki can accommodate a payload 1.6" diameter x 11.2" long with a maximum weight of four pounds. A survey of the academic community indicates that use of Super Loki rockets for experimentation and research becomes even more valuable if larger



payloads (3" dia.) can be added to the dart. Through the addition of a fairing, payloads can be retrieved, and launch elevation adjusted to increase altitude or microgravity duration.

However, launching payloads is only part of the benefit of this program. The training opportunities for students to test, troubleshoot, repair, and maintain ground support equipment and launch facilities is extremely valuable even without a launch. Valuable also is the camaraderie that develops between technicians and engineers working together.

Any venture that can provide an avenue for dependable, timely, and economically-competitive access to space is poised for success. SpaceTEC is working toward this goal and will be seeking academic partners to participate in this initiative.

Frank Margiotta

Calhoun and the North Alabama Aerospace Industry Host 2nd Annual Aerospace Technical Event for the North Alabama Region

The 2nd Annual Aerospace Technician Recognition Event for the north Alabama region was held May 1, at the U.S. Space and Rocket Center's Davidson Center for Space Exploration in Huntsville, Alabama. Guest speakers included NASA/MSFC Acting Director Robert Lightfoot; Phillip R. Marshall, Vice President Production Operations, ULA; and Colonel John Olshefski (Ret), Strategic Advisor to Deputy Chief of Staff, HQAMC. The event recognized the contributions of the local aerospace technician workforce. Each sponsoring company selected and recognized a company technician of the year. The following technicians were nominated and recognized by their respective company:

ATK	Gary Cochran
Boeing	John Tolleson
ERC	Danny Duke
InfoPro	James Chris Turney
Jacobs NTOG	Joel Wheeler
Jacobs ESTS	Tommy Adams
LM	Jeremy Kelley
Qualis	Bill Howard
TBE	Gene Damon
ULA	Richard Kilborn

From this group of company technicians, the industry selection committee, composed of a management and technician rep, selected the 2009 North Alabama Aerospace Technician of the Year. This year, Danny Duke was selected as the "2009 Regional Technician of the Year". The nine sponsoring industry partners are, ATK, Boeing, ERC, InfoPro, Jacobs, LM, Qualis, TBE (Teledyne Brown Engineering), and ULA (United Launch Alliance). The event included door prizes and dinner donated by program partners from the aerospace and defense industry.

Zero Gravity Flight Experience Provides Weighty Experience

Physics instructor Rob Jorstad will use his recent Zero-G (weightlessness) flight experience to relate the physics of microgravity to students in his classes.

The flight, sponsored by the National Science Foundation – SpaceTEC®, gave Jorstad a personal experience he can share with his students. "There's a bunch of physics problems you can talk about," Jorstad said, "such as a plane flying on a parabolic path; what speed you have to reach to achieve zero gravity; and how you can design equipment to be operated in zero gravity. I can bring in my personal experience, which they like."

Jorstad is all about personal experience. For example, to demonstrate physics applications, he lies on a bed of nails, and in another instance, creates volcanoes with liquid nitrogen. "I feel students are more interested, and they learn more if you keep them engaged."



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SpaceTEC Supports KSC/CCAFS Family Day

The Kennedy Space Center and Cape Canaveral Air Force Station hosted their annual family day on April 18, 2009. This event allowed badged space program workers to bring their families onto center property to tour facilities such as Launch Complex 39 (with a space shuttle on each pad), the Orbiter Processing Facility (with a space shuttle inside) and other locations such as the Atlas V and Delta IV launch facilities and other historic launch facilities.

SpaceTEC, in partnership with Lockheed Martin and Space Florida, supported an air-rocket launch pad that allowed children of all ages to launch a rocket as well as tour Launch Complex 47 where Super Lokis are launched. In addition, SpaceTEC personnel were available to answer any questions the visitors had.

It is estimated that over 25,000 individuals attended this popular event, and SpaceTEC looks forward to next year!



SpaceTEC Supports FIRST Robotics Team

What do you get when you combine over 1,600 teams of high school students from 48 states, 4 provinces and 11 countries?

SpaceTEC was proud to be a sponsor of Team 801, or the "Horsepower" team from Merritt Island, Florida, as they competed in the 2009 FIRST Robotics Competition. SpaceTEC provided support through manufacturing carbon-fiber tubes for roller assemblies, composite boards for mounting electronic components and a composite scoop to help in retrieving "moon rocks" on the playing field. Additionally, Robert Ward, SpaceTEC's Program Manager, was a mentor and driver of the van provided by SpaceTEC to support the team's participation in the Palmetto Regionals in Clemson, SC.

The Horsepower Team was the recipient of the Xerox Creativity Award at the Palmetto Regional. As announced during the awards ceremony, "The Xerox Creativity Award celebrates creative design, use of a component, or a creative or unique strategy of play. Whether you want to call it 'thinking outside the box', or 'pushing the envelope', this winning team demonstrates that it has creatively gone beyond the norm in tackling this year's game challenge. This team keeps an extra eye on the competition - in both autonomous and tele-operated modes. Through very creative programming and use of a pan and tilt camera, their turret can track and lock on to their opponents' targets, allowing their mustang to stampede the rival

teams' trailers with moon rocks. Congratulations to Team 801 - Horsepower!"

Team 801 persevered through to the quarter finals, where a computer glitch knocked them out of the competition. However, this did not dampen their spirits. As they look toward next year's competition, they have the goal of incorporating more composites into their robot design.

Like no other competition, FIRST Robotics combines the excitement of sport with science and technology creating a unique varsity sport for the mind. This creates a unique opportunity to inspire the next generation of aerospace technicians, and SpaceTEC is proud to be a part.



Expanded Initiatives in Training at Calhoun

Jacobs Technology, NASA Test Operations Group (NTOG) at MSFC, one of the college's new industry partners, realizes the value of their technician workforce. Their goal is to achieve SpaceTEC certification for all their technicians. Jacobs' technicians took the readiness class in November and obtained the highest pass rate at Calhoun Community College since the SpaceTEC certification became operable.

Jesse Ornter, Jacobs Technology (NTOG) site manager at MSFC, had a plan to help his people succeed. He requested that Calhoun offer mini workshops for the NTOG technicians in categories/competencies where additional strengths were needed. To that end, Calhoun offered an 8-hour, hands-on workshop, lead by a KSC Subject Matter Expert (SME) in Test & Measurement on April 4, 2009. Twenty area technicians, including thirteen from Jacobs, four from Boeing, three from ATK and four Calhoun SpaceTEC Examiners (STEs) attended. This opportunity provided a win-win situation for technicians as well as Calhoun's STEs. Students broadened their body of knowledge, and STEs gained professional development from Subject Matter Expert Katie Lee.

As Katie Lee, Senior NDT Engineer at USA, KSC, Florida, and Instructor at BCC says, "It is never a dull moment at my job. I started my career 24 years ago as a NDT technician. I am proof that perseverance and diligence pays off. I continued my career with evening classes. I worked hard and studied hard and worked my way up through the ranks. If I can do it, you can do it." Many of the aerospace technicians here in the north Tennessee Valley have the same mantra.

The Jacobs team worked hard to gain the skills



needed to become "Core Certified". One of the lead technicians took it upon himself to structure the Air Force Readiness material so other technicians could review the sample questions from each category.

The number of certified technicians in the north Tennessee Valley area now stands at 92. Calhoun's Aerospace Technology Advisory Committee established a goal of 75 new certified technicians for 2009. Calhoun and industry partners are working hard to achieve that goal. Jacobs Stennis has approached Calhoun to deliver the SpaceTEC certification to their technicians. College staff feel this is a doable process, as two of their certified technicians have been trained as SpaceTEC Examiners, and will be able to deliver the oral/practical exam at Stennis. Calhoun's plan is to provide additional in-depth workshops in the future, and to deliver the workshops to distance users as well as direct contact students, either synchronous internet connection or asynchronous via digital tape.



State Recognizes Educational Partnership that Provides Aerospace Job Opportunities

Antelope Valley College and Northrop Grumman Corporation were recently honored by California's premier occupational education association for an innovative partnership that provides necessary skills for students seeking jobs in the aerospace industry.

The California Community College Association for Occupational Education has announced that the winner of its Excellence in Partnerships Award was the college's Certification Training Program, which in its initial session last summer trained 19 students who were subsequently hired by the company.

The award was presented in March at a statewide conference in San Francisco.

"This cooperative effort points to the value of community colleges in helping turn around our nation's economy," said Dr. Jackie L. Fisher Sr., president of Antelope Valley College. "There are jobs out there for people with the right education and skills. We have the ability to

train people for jobs quickly and cost effectively."

"This collaborative program is a "win-win-win" for the college, the community and Northrop Grumman," said Orville Dothage, manager for Northrop Grumman's Advanced Production Training Centers. "The training provides the essential skills we need."

Northrop Grumman representatives approached the college early in 2008 about providing training for much-needed aircraft fabricators.

Within weeks, the college – led by Assistant Professor of Aeronautics Maria Clinton — made modifications to its existing curriculum and calendar in order to create an intensive summer training program. Training was provided at the college's state-of-the-art facilities eight hours a day, five days a week during an eight-week summer session.

"All 19 students that Northrop Grumman hired are still with the



company," Maggie Drake said. Drake has served as dean of the college's Technical Education Division for 10 years.

Since last summer, another group of students trained at the college, bringing the number of AVC students hired from the program to nearly 50. "We've hired about 95 percent of each graduating class," said Dothage.

News from Doña Ana CC

Doña Ana Community College has become a partner in a UP Aerospace rocket launch. The college had students preparing a payload for the recent April 25th launch from Space Port America near Las Cruces, NM.

The 2009 Rock-it! Program is a program in which students between high school and college build and test electrical circuit boards to collect data which is loaded into a payload for a suborbital rocket flight. These payloads include a Geiger

Counter, which detects alpha, beta, and gamma radiation, a temperature sensor, pressure sensor, and accelerometer which measures the acceleration on the x, y, and z axis. The student is responsible for building the electrical circuits, loading and programming flight code, and the integration of the other payloads. These student-made payloads are launched into suborbital space flight on the Space Loft XL rocket produced by UP Aerospace in Colorado.



Pictured are student-Edward B. Poole- Dona Ana Community College/Mayfield High School Las Cruces NM and Instructor Jon Eric Davis. Mr. Davis is an instructor in Doña Ana's Aerospace Technology program. Marco Garay (not pictured) teaches in the electronics and manufacturing program and was constantly involved in the "Rock-it!" program.

SpaceTEC Certifies Aerospace Technicians in Vehicle Processing

SpaceTEC is pleased to announce the certification of 15 technicians in the Vehicle Processing Concentration. To qualify for this concentration, all technicians must first be Core certified. A 15-hour Readiness course was offered in January and February with testing beginning the end of February.

The Vehicle Processing Concentration covers Aerospace Systems, Electronic Fabrication & Fiber Optics, Fluids Systems, Structural Fabrication and Technical Task Analysis. The Vehicle Processing certification exam follows the same format as the Core exam with written, oral and practical sections. Congratulations to the following technicians:



**Rene
Arriens**



**Robert
Batinchok**



**Adam
Copley**



**John
Cox**



**Kendall Crook
(Maj. USAF)**



**Michael
Friend**



**Kim
Laird**



**Ron
Lauto**



**Anthony
Lester**



**Kelly
Longhofer**



**Dave
MacAdam**



**Brian
Madgett**

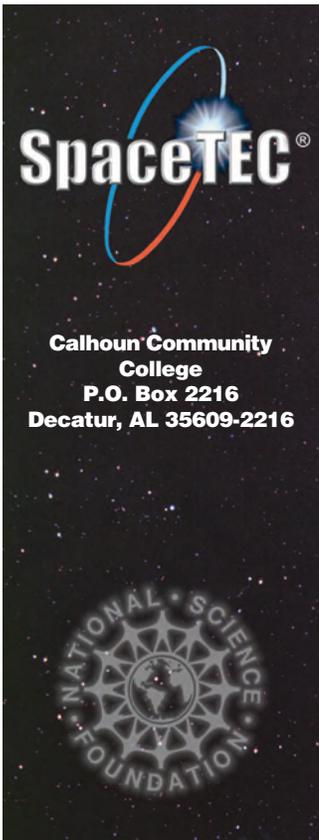


**Timothy
Marks**



**Jonathan
Trowbridge**

Anthony Glass, not pictured.



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