

SpaceTEC[®]

National Aerospace
Technical Education Center

Talk

FALL 2006

SpaceTEC[®] Member Institutions

Allan Hancock College
(California)

Antelope Valley College
(California)

Brevard
Community College
(Florida)

Calhoun
Community College
(Alabama)

Community College
of the Air Force
(Alabama)

Cuyahoga
Community College
(Ohio)

Doña Ana Branch
Community College
(New Mexico)

Embry Riddle
Aeronautical University
(Florida)

Edmonds Community College
(Washington)

Tarrant County Community College
District
(Texas)

Thomas Nelson
Community College
(Virginia)

Visit the SpaceTEC[®]
website at:
<http://www.spacetec.org/>

A Message from the PI . . .

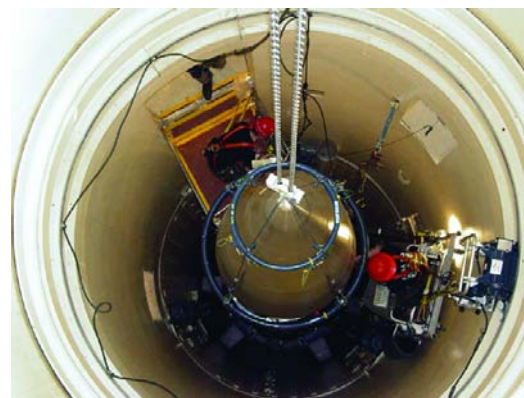
We are off and running in our fifth year as an NSF National Center of Excellence, surrounded by new and changing opportunities and looking forward to the next “big thing” in aerospace. Since our last *SpaceTEC Talk*, NASA has awarded a contract to Lockheed Martin for the new Crew Exploration Vehicle (CEV) and named it Orion. The pace of work taking us back to the moon is accelerating. See the details at http://en.wikipedia.org/wiki/Crew_Exploration_Vehicle.

At the same time this major government initiative gets underway, the NASA Commercial Orbital Transportation System (COTS) work has been awarded to Space X (\$278M) and Rocketplane- Kistler (\$207M) for new demonstration vehicles aimed at private enterprise. Specifics include:

- SpaceX is partnering with SPACEHAB, ARES Corp., Odyssey Space Research (Houston), and Paragon



Air Force technicians work on flight hardware in a controlled shop area.



Technicians work on a missile suspended inside a launch silo.

Space Development to use the Falcon 9 launch vehicle that could fly as either a crew transport or cargo vehicle (pressurized and unpressurized). Falcon 9 will be recoverable, but is not planned to be reusable.

- Rocketplane-Kistler (RpK) is partnering with Orbital Sciences and Lockheed Martin using the K-1 vehicle which is completely reusable. The RpK second stage is the orbital vehicle, which has interchangeable modules.

These new developments have given real emphasis to ventures in aerospace that rely on private-sector entrepreneurs who are working in partnership with government entities to begin to bridge the gap between traditional government-only programs and those driven by private funding and commercial ventures. As our nation's space program transforms its very core, we are fortunate to be an integral part of this important and essential activity.

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A Message from the PI, continued

Our network of colleges continues to evolve, and we **welcome Doña Ana Branch Community College**, Las Cruces, New Mexico, and **Tarrant County College District**, Ft. Worth, Texas, as new partners. Doña Ana is the educational institution closest to the newly emerging Spaceport America. Tarrant County is home to the National Center for Aircraft Technician Training (NCATT), a sister NSF ATE project, bringing with it a major new initiative in developing an avionics curriculum and related credentialing activities.

In August, SpaceTEC was invited to brief the World Wide Conference of USAF Missile Maintenance Technicians, and discussions that followed have resulted in commitments to offer certification readiness courses and SpaceTEC certification examinations at all three of the country's ICBM bases in the west.

We can expect to see many exciting developments from these new initiatives, as well as continuing accomplishments from our current partners in the coming months. In the pages that follow, there are excellent overviews of key achievements that include the testing of more than 350 technicians nationwide resulting in more than 130 new Certified Aerospace Technicians™.

This is an exciting time for SpaceTEC, and we look forward to the next steps in this important adventure. In October, we will attend the NSF ATE PI Conference in Washington, DC, and we are also hosting a Co-PI Conference in Las Cruces, NM, in conjunction with this year's X-Prize Cup. We are especially grateful to our industry counterparts and to our friends in NASA, the NSF, the FAA, and the U. S. Air Force for their continuing interest and support. If you aren't actively engaged and want to be a part of this work, please give us a call.

Al Koller

SpaceTEC® Trains 13 New SpaceTEC® Examiners (STE's)

SpaceTEC® is pleased to welcome 13 new SpaceTEC examiners to the certification ranks. These additional examiners more than double the number of examiners available nationwide.

Examiners from seven different locations participated in half day workshops that incorporated both lecture and hands on training. Training sessions were conducted at Brevard Community College, Vandenberg Air Force Base (Allan Hancock College) and Antelope Valley College. The new examiners will represent Antelope Valley College, Vandenberg Air Force Base, Brevard Community College, Community College of the Air Force, Cuyahoga Community College, Embry Riddle Aeronautical University and NASA Dryden.



JR Breeding
Community College
of the Air Force



Patti Browne
Antelope Valley
Community College



**William
Fredriksen**
NASA Dryden
(Antelope Valley
Community College)



MSgt Daryle Fry
Vandenberg Air
Force Base
(Allan Hancock
College)



Jack R. Halliday
Antelope Valley
Community College



Ken McCreight
Cuyahoga
Community College



Tyrone Mettler
Antelope Valley
Community College



**TSgt Scott
Munden**
Vandenberg Air
Force Base (Allan
Hancock College)



Carmen Prater
Brevard Community
College



SMSgt Bill Shelden
Cape Canaveral Air
Force Station
(Brevard Community
College)



Howard Trent
NASA Dryden
(Antelope Valley
Community College)



Tom Yanus
Embry Riddle
Aeronautical
University

Not pictured, **Gary Pretzlav**, Cuyahoga Community College

It's only an open field today, Bossy, but look out – Spaceport America is coming!

If you've ever dreamed about going into outer space, the time is rapidly approaching when that dream could become a reality. Plans are currently being finalized for the design and construction of a commercial "spaceport" near New Mexico's second largest city. The spaceport, recently renamed "Spaceport America" (Spaceport), will be constructed approximately 45 miles north of Las Cruces, New Mexico, and will support sub-orbital flights for a variety of scientific and commercial ventures.

Mr. Lonnie Sumpter, Executive Director of the newly formed "New Mexico Office for Space Commercialization," commented on the possibilities for commercialization of space when he stated that "We're just beginning to see all the possibilities our way of life can benefit through educational and research activities in zero gravity."¹ Virgin Galactic, a British owned company, and a financial partner in the Spaceport development, has received approval to fly the paying public to space, and more than 30,000 people have made a down payment on the \$200,000 ticket.

Doña Ana Branch Community College (DACC), the newest member of the SpaceTEC Consortium, has been carefully watching the growing interest in this exciting commercial aerospace field and is convinced that a unique educational need is unfolding. Stepping up to that opportunity, Dr. Margie Huerta, DACC's Campus Executive Officer, recently announced plans to seek a grant from the National Science Foundation for funding to support the offering of an *Associate of Applied Science Degree in Aerospace Technology*, with a specialty in *Commercial Aerospace*. Commenting on this new offering, Jerry Welch, DACC's Dean of Industrial Studies, stated that "In many respects, this emerging field of commercial aerospace truly is a



new frontier. Due to the entrepreneurial nature of businesses that will support the Spaceport, the successful candidate in this new field will need a much broader range of technology based skills."

Further commenting on the unique nature of commercial aerospace and the challenge of recruitment, Vince Thomas, DACC's Special Projects Manager, noted that "a number of companies have expressed

the need for a more technically oriented generalist, rather than the specialist required by conventional aerospace." Thomas further explained that much of his prior work in recruitment through outreach "bridge" programs would again be utilized to reach potential candidates for the new Aerospace degree offering.

DACC plans to model their aerospace program offering around the core competencies defined by SpaceTEC, with "concentration" courses defined through a DACUM study of selected commercial companies. DACC's goal is to graduate students that can successfully meet the SpaceTEC certification requirements and function equally well in both the conventional and new commercial aerospace environment.

¹Miller, Jay, "The Space Age is alive and well in NM", Las Cruces Sun-News, December 13, 2005.



SpaceTEC Certification Exam Applied as an Assessment Tool

The Boeing Company in Huntsville, Alabama, is using Calhoun Community College to support an internal initiative to evaluate technician job skills as part of a technician job re-classification project. After reviewing the content of the SpaceTEC Core Written Certification Exam, Boeing's Joint Classification Implementation Committee (JCIC) concluded that more than 80% of the new Integration Technician job requirements are addressed by the core certification exam. Consequently, Calhoun Community College is using the SpaceTEC Core Written Certification Exam as the formal independent assessment element in the evaluation. Individual results from the exam will be combined with each employee's self assessment and certification records; then, Calhoun will make recommendations to the JCIC on identified knowledge gaps and appropriate training. The end result will be individualized training plans for technicians that will integrate and broaden the skill base of Boeing's technician workforce. The SpaceTEC on-line exam protocol allows individual assessment outcomes to be treated as confidential information.

Jim Swindell, SpaceTEC Co-PI and Assistant Dean of Workforce and Technology Education at Calhoun said, "This project is providing an excellent opportunity to use the SpaceTEC Core Certification Exam, which was industry reviewed and endorsed nationwide, as an effective tool for industry workforce assessments."

Certification Recognition Events

Brevard Community College (BCC) and SpaceTEC recently participated in ceremony activities recognizing individuals who have earned their SpaceTEC Certified Aerospace Technician™ certificate. Ceremonies were hosted by the 45th Space Wing at Cape Canaveral Air Force Station, United Space Alliance, and SPACEHAB, Inc. All of the recipients participated in a 16-hour readiness course, facilitated by BCC, prior to sitting for the exam. The readiness courses and exams were funded in part by a grant from the Florida High Tech Corridor Council.



BCC President, Dr. Thomas Gamble, and SpaceTEC officials joined the first members of the 45th Space Wing to commemorate their SpaceTEC certifications on June 29, 2006, at Cape Canaveral Air Force Station.

United Space Alliance recently honored SpaceTEC Certified Aerospace Technicians at a ceremony held in the Orbiter Processing Facility under the orbiter Atlantis.



Technicians employed by SPACEHAB, Inc. receive their SpaceTEC certifications in a ceremony recognizing their achievement.

From Projectile to Propulsion SpaceTEC / Cuyahoga Community College / Fredon Corporation

From Projectile to Propulsion is a joint outreach program developed by Cuyahoga Community College with support from SpaceTEC and Cleveland-area industry including the Fredon Corporation. The program provides students with hands-on experiences and information on careers in the manufacturing machine trades industry. Students attend 48 hours of training for approximately four months and earn three college credits toward an Associates of Applied Science degree in Technology. The end result of this training is a background in aero-

space technologies and the relationship to manufacturing outcomes that are parallel to SpaceTEC core and concentration competencies. The study "Projectile vs. Propulsion" is an additional focus of the program. Student activities include the manufacture or assembly of scale model versions of a **non-firing Napoleonic field cannon, or SpaceShipOne**. At the end of the program, students keep their manufactured cannon or model of SpaceShipOne as a reward for their hard work and dedication.



General Electric to use SpaceTEC Exam for Skills Assessment

Cuyahoga Community College has been contracted by General Electric to deliver readiness course training and administer the SpaceTEC certification exam to 20 employees. Cuyahoga has worked closely with **Dave Fricton** from SpaceTEC to deliver the quality training and skills assessment testing to General Electric as they seek to upgrade the skills and credentials of their employees.

SpaceTEC Welcomes New Technical Program Manager

Doug Howse has joined SpaceTEC and serves as the Technical Program Manager. Mr. Howse comes to SpaceTEC following a successful 20-year space and missile career in the U.S. Air Force, where he retired as a Major. He has worked on the Titan III/34D, Titan IV, Minuteman III, MSLS and Delta Clipper launch vehicle programs. He managed the CERES satellite ground test operations center in Colorado Springs, CO in support of DOD space operators. Doug has also served as an adjunct professor in the Brevard Community College, Aerospace Technology Program.



Welcome aboard, Doug!



SpaceTEC® Talk is published by the Office of Public Relations of Calhoun Community College to support *SpaceTEC®*.

To submit information for this publication, or to be placed on the mailing list, please write to the Office of Public Relations, Calhoun Community College, P.O. Box 2216, Decatur, AL 35609-2216, or call 256/306-2561.

www.spacetec.org

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Community College of the Air Force Awards College Credit for SpaceTEC Aerospace Technician Certification

The Community College of the Air Force (CCAF) approved awarding 25 hours of college credit for the Aerospace Technician Certification issued by the National Aerospace Technical Education Center (SpaceTEC).

In April 2006, the Community College of the Air Force (CCAF) Licensure and Certification Programs Branch completed their evaluation of the Aerospace Technician Certification issued by the National Aerospace Technical Education Center (SpaceTEC®).

Since 2002, CCAF has been part of a consortium of community colleges and universities offering aerospace and related technical education programs supporting SpaceTEC. The SpaceTEC initiative, funded by a National Science Foundation (NSF) Advanced Technological Education (ATE) grant, developed and implemented an industry-driven and government-endorsed technical education process for aerospace technicians to be shared among participating institutions. The initiative also includes industry-recognized professional certifications with specialized concentrations areas.

- The Air Force partnership with SpaceTEC offers thousands of aerospace and aviation technicians the opportunity to pursue



SpaceTEC and Air Force personnel inside a missile launch silo in Wyoming.

professional certification.

- Active duty, guard and reserve technicians serving in aerospace and aviation specialties are eligible to pursue the SpaceTEC Aerospace Technician Certification. The Air Force SpaceTEC Certification Program is currently being developed by HQ AF/A4MW, CCAF and 522 TRS. The program will include a SpaceTEC Readiness Specialized Course.
- Select qualified Air Force technicians may be trained and certified as SpaceTEC evaluators, empowering them to administer the Oral and Practical phase of the certification process. A CCAF staff member, two individuals from Vandenburg AFB, CA and one individual from Patrick AFB, FL, were trained and certified as SpaceTEC Evaluators in June

2006. Air Force personnel certified as SpaceTEC examiners will enable the Oral and Practical exams to be administered at convenient locations and at a reduced cost to technicians.

- CCAF Dean of Academic Affairs approved awarding 25 semester hours of technical credit towards the Missile and Space Maintenance degree program.
- The AF/SpaceTEC partnership will offer certifications at remote sites such as those at active missile maintenance facilities in the northwestern United States.
- For more information about SpaceTEC®, visit <http://www.spacetec.org> or contact the CCAF Licensure and Certification Programs Branch at DSN 953-5938 or ccaf.dfal@maxwell.af.mil.



Explore. Excel. Succeed.

NASA Langley Research Center and Thomas Nelson Community College
announce a new and exciting Cooperative Education (Co-op) opportunity for **experienced technicians** to gain Federal work experience and earn an Associate Degree in Mechanical Engineering Technology.



NASA

Co-op Program for Experienced Technicians
This unique program will provide six (6) experienced technicians with:

- **Paid** work experience in aerospace
- **Paid** college tuition and books while earning an Associate Degree in Mechanical Engineering Technology

Required Qualifications—Who Should Apply
Three (3) years experience in **conventional machining** including but not limited to conventional milling, lathe operations, and use of precision measurement tools. Capable of interpreting and working from detailed engineering drawings with pertinent specifications and defined tolerances. U.S. Citizenship and background check required.

Preferred Qualifications
At least one (1) year of **specialized machining** experience in one or more of the following: CNC mills and lathes, horizontal/vertical jig boring, grinding (i.e. surface, cylindrical, etc), wire electrical discharge machine (EDM), and sinker EDM machine experience. Experience with either Master CAM, Unigraphics, or Pro-Engineer a plus. Familiarity with aerospace applications a plus.

Salary and Benefits
NASA, the world's leader in space and aeronautics, offers competitive salaries and benefits.

Information Sessions
October 2, 2006 at Noon and 6 pm
Meet with NASA and TNCC representatives
TNCC Hampton Campus, Peninsula Workforce Development Center
RSVP: 757-865-5882

Application
Submit resume by October 9, 2006 to:
Thomas Nelson Community College
Cooperative Education Programs
600 Butler Farm Road, Hampton, VA 23666
Tel: 757-865-5882 E-mail: careercenter@tncc.edu www.tncc.edu



Rocket Workshop/Educator Conference

Due to an unexpected change in conference dates, the SpaceTEC Rocket Workshop, sponsored by Edmonds Community College (EdCC) Materials Science program, was held in conjunction with the Washington State Association of Career and Technical Education (CTE) Teacher Conference in Spokane, Washington.

The conference, which focuses on science, technology, and mathematics, was a complete sell-out and the changes proved beneficial for the Rocket Workshop resulting in standing room only attendance.

In the time allotted to the workshop, Dr. Tom Steffen (SpaceTEC) provided a succinct explanation of the relationship between a rocket's center of pressure and the center of gravity. Participants listened intently to the presentation then jumped right in to the hands-on portion of the workshop. Several attendees stayed after the workshop and continued to ask questions.

Twenty-five participants made paper rockets and launched them adjacent to the hotel on to a small grass strip next to the Snake River. All the rockets flew successfully with the longest flight of 250 feet



High school career and technical education teachers launching paper rockets during the Edmonds Community College rocket workshop on August 9, 2006, during the Washington Association of Career and Technical Education Conference.

by Alan Wardsworth of Central Valley High School. For his efforts, Alan received first prize and took home a rocket launcher. Second prize, a foot-powered air pump, was awarded to Davis Soelling of Aces High School. All the participants vowed to return next year for a proposed expanded SpaceTEC workshop that will be hosted by Edmonds Community College.

Gene Fusch (Co-Instructor, EdCC), collected e-mail addresses and agreed to send the participants information for next year's workshop, pictures of the event, and the specifications to build a rocket launcher so the concepts learned could be shared with students.

Moe Broom, the State Pathway Coordinator for Technology and Industry Education, visited the workshop and witnessed the

Mr. Alan Wardsworth, a teacher from Central Valley High School, received the rocket launcher for having the longest distance flight of 250 feet and Mr. Davis Soelling, a teacher from Aces High School, received a foot-powered air pump for coming in a close second.



extreme enthusiasm and concentration of the participants. He plans to support and promote next year's workshop to CTE high school faculty across the state.

News from Antelope Valley

Congressman Howard P. "Buck" McKeon represents the Antelope Valley district. Last year, he was appointed Chairman of the Education and Workforce Preparation Committee, which also oversees the Carl D. Perkins Act. Upon the announcement of his chairmanship, the President of Antelope Valley College presented Congressman McKeon with a B2 model made of composites materials by students in the college's Composites program. The wing span is approximately 2 feet, and it was very detailed as far as scale and paint. The Congressman is very pleased with his model.

On January 24, 2006, Congressman McKeon's advisor on education, Heath Weems, toured the Antelope Valley campus for approximately 3 hours. His tour began in the Aircraft Fabrication and Composites labs and highlighted visits to all technical, vocational, and career laboratories which included Heating and Air Conditioning, Nursing, Automotive, Auto Body, and Electrical. Over each piece of equipment that was funded with Carl Perkins funds was an 8-1/2 x 11 sign that read "Funded by Carl D. Perkins Act". The tour was very successful.



Dr. Tom Steffen walks high school teachers through the construction process while discussing strategies to teach aerodynamics during the Edmonds Community College rocket workshop on August 9, 2006, during the Washington Association of Career and Technical Education Conference.

Civil Air Patrol Descends on the Cape



On April 6, 2006, SpaceTEC in conjunction with the Department of Labor and the 45th Space Wing at Cape Canaveral Air Force Station, hosted 109 Civil Air Patrol Cadets for a bivouac at KARS Park. The weekend was filled with rocket workshops, lectures, tours and lots of FUN!!! The civil air patrol has recorded the event and posted it on their website at <http://www.capcoralsprings.org/videos.htm>. The video will also be used in a 30 minute documentary to be aired at a later date. The event was so successful that SpaceTEC was asked to host a similar event for the winners of a national CAP contest in August.



SpaceTEC received special recognition for its efforts in developing the Certified Aerospace Technician™ program and its contribution to workforce development in Florida.



Funded in part by a grant from the National Science Foundation