2012-2013
National Visiting Committee
Annual Report

Table of Contents

SpaceTEC® 2012-2013 NVC Report

Executive Summary

About us:

We are the National Science Foundation's ***National Resource Center for Aerospace Technical Education***, located at Cape Canaveral, Florida
Our vision is to be the U. S. focal point for authoritative information, best practices, and lessons learned for aerospace training and education
Our mission is to assure availability of qualified technicians who possess the skills and competencies required by the U. S. aerospace industry
Our goals are to provide educational materials, preparatory courses, and credentialing for our nation's aerospace technical workforce
Our strategy is to operate a national infrastructure to implement curriculum, skills standards, certifications, and professional development

What we've done:

This year the SpaceTEC® team achieved essentially all of the transformative activities for 2012 outlined in last year's NVC meeting:

- SPI moved to Cape Canaveral and succession changes were initiated by several partners, the NVC, NATAC, CITAC, and SpaceTEC® HQ
- NSF awarded SpaceTEC® a $40,000 grant supplement for Cert*TEC*® credentialing aimed at self-sufficiency with new programs/partners
- SPI tripled the credentials it offers technicians in fields beyond aerospace including electricity/electronics and composites
- SPI achieved international accreditation under ISO standard 17024 (personnel certification entity) and passed an FAA safety review
- SPI submitted NSF proposals for the SpaceTEC® NRC renewal (4 Yrs/$1.6M) and a new Cert*TEC*® Project (3 Yrs/$900K) as planned
- NASA authorized SPI the controlled use of the entire 30 year database of USA education materials from the Space Shuttle Program

➢ ***Our goals were evaluated using a Delphi process, resulting in an overall score of 90%.*** **See each goal and their rubrics for details.**

What we'll do next:

1. Make operational the NASA Shuttle education materials for repository use (navigation, SMEs, control systems, logging and distribution)
2. Utilize the NASA/USA Shuttle technician credentialing materials to package "mini-certs" suitable for commercial space industry applications
3. Secure agreements/partnerships with key commercial space organizations to pilot/adopt performance-based workforce credentialing
4. Review partner college program needs for revision and update of curricula and instructional materials for core and concentrations
5. Implement a program accreditation process to verify/qualify instructors and curricula used in SpaceTEC®/Cert*TEC*® credentialing
6. Create systems to credential veterans by matching their service MOS skills and competencies to civilian technician job needs (VetTEC™)
7. Initiate hands-on credentialing programs to provide performance-based career pathways for program graduates in non-aerospace fields
8. Partner with the NAM Management Institute to create/implement performance-based skills certifications as stackable credentials
9. Streamline the quality assurance program to test/re-certify examination cards/equipment for use in credentialing candidates
10. Emplace certification programs at NSF ATE Centers/Projects where SpaceTEC®/Cert*TEC*® credentials will enhance technician job placements

What we need to succeed:

- ➢ Early National Science Foundation notification of award of the SpaceTEC® National Resource Center four year grant renewal (May/June 2013)
- ➢ Recognition of the need for and value of SpaceTEC®/Cert*TEC*® credentialing by management in all participating organizations and beyond
- ➢ College partner support for items 4-7 above and commitments for invigorating current programs and initiating non-aerospace credentialing
- ➢ Industry partner support in promoting SpaceTEC®/Cert*TEC*® credentialing in commercial space, aviation, and related technology fields
- ➢ Identification of funding opportunities by all participants at any level – state and federal grants, private enterprise sponsorships, etc.

Actions and Responses to the National Visiting Committee Evaluation

2012 NVC CHALLENGES/CONCERNS – SpaceTEC NRC, NSF Grant, DUE# 0903180	
NVC COMMENT	**SPI ACTION**
A. The National Certification program continues to expand and appears to be a very healthy endeavor. Expansion of this program internationally will logically follow the successful expansion of the current domestic initiative. However, timing of launching an international initiative is crucial to preclude counterproductive competition for resources between the national and international initiatives. A review of the strategy and implementation of an operations plan could mitigate this concern. A plan to begin the expansion nationally with companies that have global footprints may be a way to logically grow the enterprise from a national to an international endeavor.	The concerns expressed by the NVC were mirrored by our partner colleges and have shaped the approaches taken. No international certification activities have been initiated, but work has continued with the Nida Corporation to explore options involving their work. 1. SPI joined the National Coalition of Advanced Technology Centers – a network of higher education resources that advocates and promote the use of technology applications that enhance economic development and workforce development program and services – to strengthen our domestic outreach into non-aerospace STEM work. 2. SPI is now an outreach partner of Community Colleges for International Development (CCID) – a consortium of 160 two-year colleges in the U.S. and 12 other countries – providing us a strong capability for assessing opportunities for international activities. 3. SPI applied for and received international accreditation under ISO standard 17024 (personnel certifications), opening opportunities for further development of both domestic and international activities when those actions are appropriate.
B. The NASA Langley Co-op and subsequent employment program is a model that could be adopted by other NASA centers. We recommend a NASA center summit led by NASA Langley, which would provide a forum to display this program and its very positive results. The potential fallout from this summit would be the emergence of NASA as an advocate for SpaceTEC nationally.	NASA Langley has hosted a session with representatives from all NASA Centers at which the SpaceTEC® certifications were discussed and the Langley Co-op/Apprenticeship model was reviewed. Because several NASA Centers use contracted support and have very few or no NASA technicians, the model remains confined to Langley. Stu Harris retired from NASA in January but remains active on the NVC as in consulting roles. We will continue to support the NASA program at Langley with visits to recognize the graduates who pass the SpaceTEC® Certification exams and continue their NASA apprenticeships.
C. Beyond the addition of other NASA centers SpaceTEC® should continue to develop new partners both in industry and academia. Career path information should be developed and displayed to enable candidates to fully understand the benefits of the SpaceTEC® program	1. SpaceTEC® expanded its partnerships/affiliate relationships using formal agreements (LOUs/MOUs). The latest additions are Eastern Shore Community College (near Wallops) and Tennessee Technology Center in Hohenwald. 2. SpaceTEC® is working with the NAM Management Institute on career pathways and stackable credentials. A formal partnership is under discussion.
D. The education partners indicated a need for web-based training for faculty members and a registry of certified technicians and employers. This can be accomplished by expanding existing methods already in use.	1. Web-based training is under development and site-specific workshops were offered over the past year. A program for accrediting faculty is under review. 2. The SPI websites for SpaceTEC® and Cert*TEC*® contain listings of certified technicians and charts of partners/employers active in those programs.

SpaceTEC®
NSF National Resource Center
2013 Organization Chart

CertTEC® Certifying Technical Employee Competence™

National Visiting Committee

External Evaluator

National Science Foundation
Advanced Technological Education Programs

Fiscal Agent - Brevard Community College

SPI Board

Dr. Al Koller
PI & Managing Director

ATAC
NATAC - CITAC

SpaceTEC/CertTEC Staff
Program Manager/Deputy Director
Certification Manager
Quality Specialist
Office Manager
Data Specialist
Consultants/Contractors

College Partners and Affiliates

- Allan Hancock College
- Antelope Valley College
- Brevard Community College
- Edmonds Community College
- Calhoun Community College
- Thomas Nelson Community College
- Doña Ana Community College
- Tennessee Technology Center
- Embry Riddle Aeronautical University
- Eastern Shore Community College
- Community College of the Air Force
- Tulsa Technology Center

Business/Industry and Government Partners

Joint Ventures:
NCATT, ETA-I, Nida

Agency Agreements:
NASA, FAA, VA, Air Force, Navy, Army

Memberships/Contracts:
NCATC, ACE, ICAC. CCID, CCTS, Space Florida

LOU's/MOUs/MOAs:
Abaris Training, Astrotech, Lockheed Martin, ERAU, Bionetics, CSS Dynamac, United Launch Alliance, 4Frontiers, Chemquest, Jacobs Technology, Air & Space Consortium, SpaceX, Space Coast Energy Consortium, STC, VA*e*

Funded in part by a grant from the National Science Foundation

How We've Done in 2012-13

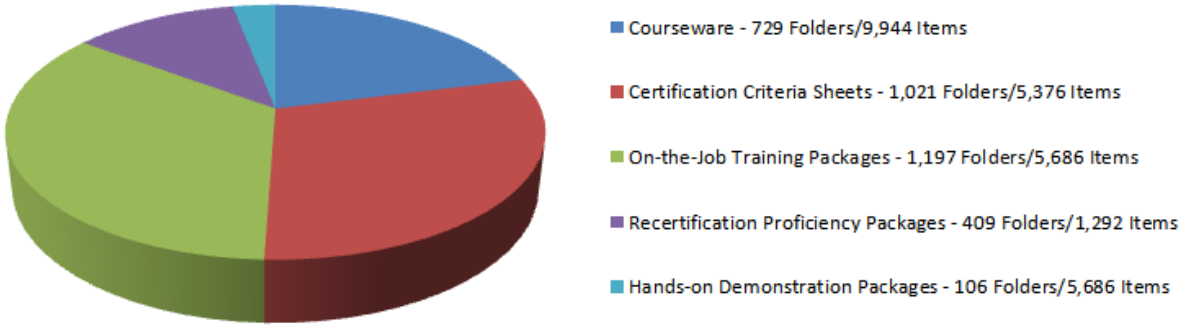
Summary of the Accomplishments Per Last Year's Plans

1. Complete the SpaceTEC®/Cert*TEC*® Quality Plan to meet ISO 17024 and ISO 9000-1 by 5/12
   Status: A Quality Plan (28 pp.) was completed July 25, 2012; subsequently used in the ICAC review.
2. Submit an application to the International Certification Accreditation Council (ICAC) NLT 6/12
   Status: Applied for accreditation July 20, 2012. ICAC accreditation granted Aug 29, 2012.
3. Submit the 2011 formal NSF annual report via FastLane when requested (5/12)
   Status: The NSF 2011-2012 annual report was submitted via FastLane (online) on June 7, 2012.
4. Conduct the initial ITAC International meeting by 7/12, location TBD and pending funding availability
   Status: ITAC was converted to CITAC to emphasize commercial industry certifications via Cert*TEC*®.
5. Convert the Vehicle Processing Concentration Readiness Course to Prep Course Format by 8/12
   Status: Vehicle Processing prep course was completed August 20, 2012.
6. Initiate the Aerospace Manufacturing Prep Courses (4 modules) for initial use NLT 8/12
   Status: Curriculum for Structures and Assembly completed November 15, 2012; initial use expected in March 2013. Work on Manufacturing prep courses was suspended due to faculty loses at Calhoun CC.
7. Participate in the NSF ATE PI Conference and the FAA COMSTAC in Washington, DC, 10/12
   Status: Participated actively, with public statements/acknowledgements given at both. Showcased all 400 core-certified aerospace technicians in a banner displayed at the SpaceTEC® booth at ATE.
8. Initiate a formal proposal for NSF Funding either for NRC Renewal OR National Certification Center, 10/12
   Status: Submitted two proposals: #1303935 for SpaceTEC® on 10-17-12; action pending; #1304020 for Cert*TEC*® on 10-18-12; reviewed by NSF and subsequently declined.
9. Offer mentoring workshops for partner colleges via webinars when/as requested
   Status: Composites workshops in Tulsa (June); CACRC/NDT Forum (Sept); CACRC webinar (Jan 2013).
10. Begin transition of SpaceTEC leadership NLT 9/12
    Status: SpaceTEC® Hqtrs relocated from Cape Canaveral AFS to City of Cape Canaveral, June 2012. Management changes: M. Gaedcke to Quality Specialist; S. Kane to Deputy Director; A. Koller part time.

2012-2013 PERFORMANCE REPORT: *SpaceTEC® Aerospace National Resource Center*

Goal 1: Expand the National Repository for Aerospace Education The NRC repository of Aerospace-related curriculum and associated certification information is fully operational, with significant changes implemented as a result of the addition of NASA-obtained data covering over 50 years of manned space flight processing experience at Kennedy Space Center and other NASA sites. Training data, along with materials supporting its creation and application, has been cataloged and stored to enhance accessibility to information. To maintain control under export and privacy restrictions, SpaceTEC® is providing users a link on SPI websites to request educational information. In addition SpaceTEC® is creating an SME database of operations personnel from NASA programs who have a tremendous legacy of skills and knowledge. A NASA Lessons Learned database of information related to incidents and corrective actions is also included. All of this information has been backed up on the SpaceTEC®-owned and maintained data storage and certification management system on a secure server at *HostDime Data Center* in Orlando, Florida.	**Score:** **86**

NASA-Obtained Data by Category and Count



Repository:

- An example of information contained within the NASA-obtained data file structure:
  - Soldering certification competencies:
    - Safety procedures
    - Identification and protection of electrostatic sensitive equipment
    - Stripping and tinning of stranded wire
    - Soldering to hooks, turret and bifurcated terminals, pierced eyelets, and solder cups
    - Soldering to single sided and double-sided printed wiring boards (PWB's)
    - Soldering to Plated-Through Holes (PTH) on printed wiring boards PWB's
    - Soldering Axial Leaded Components (ALC) to PWB's
    - Soldering Radial Leaded Components (RLC) including Dual in Line Packages (DIP's) to PWB's
    - Soldering flat packs to PWB's
    - Wire Routing and lacing (spot ties and tie wraps)
    - Inspecting solder connections, stranded wires and terminals

2012-2013 PERFORMANCE REPORT: *SpaceTEC® Aerospace National Resource Center*

Goal 2: Increase NRC Activities/Enrollments in Certification Related Programs

Per NVC recommendations, SpaceTEC® tallied the enrollments directly related to NRC activities instead of partner college programs and enrollments as presented in earlier reports. Key areas for this period include:

Activity→	Knowledge/Skills Inventories	Prep Courses	Recognition	Outreach	Workshops	Webinars	Conferences
Offerings	5	5	4	28	5	4	18
Participants	43	98	519	330	104	47	23,140

Score:

97

Recruitment/Enrollment: 2012 continued as a transition period for the aerospace industry in the United States. With 2011 ending on a bit of a sour note with the retirement of the NASA's Space Shuttle, NASA rebounded in 2012 with the successful landing of the Mars Curiosity mission. Also, SpaceX became the first private company to dock with the International Space Station.

SpaceTEC® continues to focus its operations on the needs of commercial aerospace firms in both credentialing and assessment activities:

Moodle Prep Course Screen

- Along with Knowledge/Skills Inventories (KSIs), new instruments called Industry Aptitude Surveys (IASs) were developed for workforce assessment outside the aerospace industry. Both can be customized to address the customers' needs.
- Both KSIs and IASs were administered to college classes measuring before/after progress as tools to determine course/program efficacy.
- Moodle online Prep Courses have now been developed in the Aerospace Core, Vehicle Processing, Composites and Manufacturing-Structures & Assembly areas. A similar Composites Prep Course has also been developed under the Cert*TEC*® brand. As noted above, enrollment in Prep Courses has increased.


Industry Aptitude Survey

CERTTEC

This is to acknowledge that on October 24, 2012

John Doe

completed the General Industry Aptitude Survey with the following scores in the listed topic areas:

Applied Mechanics	7.1
Industrial Safety	5.3
Materials and Processes I & II	8.2
Basic Electricity	6.4
Tests and Measurements	8

Outreach/Recognition: SpaceTEC® was active in a number of conferences and webinars during this period:

- SpaceTEC® continues to support the annual North Alabama Aerospace Technician Recognition Awards dinner. Hosted by Calhoun Community College, the 2012 event awarded the Aerospace Technician of the Year to Eric Williams with ERC (see Figure 1).
- SpaceTEC® conducted Cert*TEC*® BEE pilot tests at Western Technical College in Wisconsin and presented the BEE certification program at the Wisconsin Community Colleges EET Conference. Work is underway for follow-up.
- Based on previous BEE pilots, the Basic Electricity/Electronics certification has now become an end of course requirement for all students in the Tennessee Technology Center-Hohenwald electronics program. We expect to emplace equipment and cards to support an ongoing effort that may become a standard for all Tennessee Technical Colleges.

Eric Williams- 2012 North Alabama Aerospace Technician of the Year

2012-2013 PERFORMANCE REPORT: *SpaceTEC® Aerospace National Resource Center*

Goal 3: Maintain/Expand the Network of Partnerships for Technician Credentialing

This year SpaceTEC® has expanded its infrastructure using contracts, MOUs, and LOUs in three areas: (1) Partnering organizations providing education, training, and certification activities; (2) Stakeholders that offer advice and support for operations and employment; and (3) representatives serving on the National Aerospace Technology Advisory Committee (NATAC) and Commercial Industry Technology Advisory Committee (CITAC). SpaceTEC Partners, Inc. (SPI) – the parent Florida non-profit corporation for the SpaceTEC® and Cert*TEC*® – confirmed its membership and officers for the next two-year period.

Score:

91

Infrastructure: Support remains steady for SpaceTEC® and Cert*TEC*® initiatives. The NATAC has expanded and a Commercial Industry Technology Advisory Committee (CITAC) has been created for Cert*TEC*®. Guidelines for both organizations have been drafted, and members are being recruited. In June 2012, SpaceTEC® relocated from Building Little L on Cape Canaveral Air Force Station to a commercial property in the city of Cape Canaveral, FL. An offsite server hosting center (HostDime) has been contracted to provide secure hosting for SpaceTEC's server, providing 24/7 access to all certification examinations and prep courses. In addition, an open staff position was filled, creating a Quality and Certification Specialist to oversee the newly created Quality program and ISO 17024 credentialing accreditation was recently awarded to SpaceTEC® and Cert*TEC*® by the International Certification Accreditation Council (ICAC). Upgrades are underway on the SpaceTEC® and Cert*TEC*® websites to consolidate and integrate both sites for a more consistent message and the new sites will be published to the web following beta testing which is currently underway.

New Initiatives: SPI agreements have been made with 7 new groups: Abaris Training; Alliance Techsystems, Inc. (ATK); Eastern Shore Community College; Science Technology Corporation (STC); Space Coast Energy Consortium, Tennessee Technology Center-Hohenwald; and Veterans Assembled Electronics (VAe). In addition, SPI was invited to join the Commercial Aviation Composite Repair Committee (CACRC), an international consortium of aerospace manufacturers, airline operators and maintenance and repair organizations (MRO's). An outcome of this initiative is a professional development opportunity for the Army's Aviation and Missiles Research, Development, and Engineering Center (AMRDEC) Prototype Integration facility (PIF) located at the Redstone Arsenal, Huntsville, AL

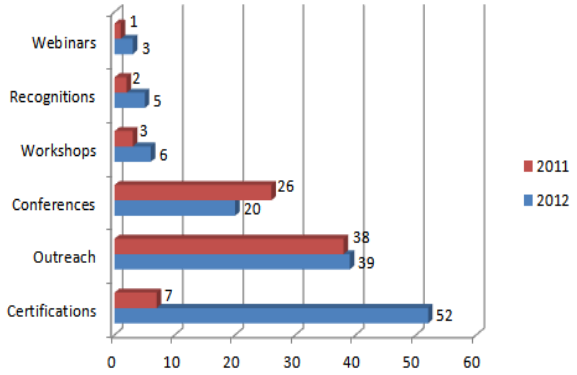
Issue: A proposal submitted to the NSF in October 2012 for funding the Cert*TEC*® initiative as an ATE project was declined, resulting in a reduction in our ability to move forward on certification initiatives in a timely manner unless additional funding streams are identified.

2012-2013 PERFORMANCE REPORT: *SpaceTEC® Aerospace National Resource Center*

Goal 4: Promote/Offer Professional Development for Educators, Examiners, and Technicians

Professional Development Workshop, Tulsa Technology Center, June 2012

SpaceTEC® activities supporting professional development include workshops, STE training, train-the-trainer sessions for new techniques and technologies, directed assistance for specific program needs by our partners such as curriculum, composites lab set-up, practical exercises, sponsorship to conferences and symposia, and articulation agreements for career development, job enhancement, and personal growth through higher education.



Score:

89

For Educators/Examiners: During 2012 SPI conducted professional development activities in several locations for educators and examiners for both SpaceTEC® and Cert*TEC*® as follows:

- Composites Professional Development workshop at Tulsa Technology Center (Edmonds, Calhoun, Thomas Nelson, Army AMRDEC)
- NASA rocket workshop at SpaceTEC® HQ, Cape Canaveral, FL
- Composites classroom and laboratory curriculum to Dona Ana CC, Thomas Nelson CC, Brevard CC, Calhoun CC
- Sponsorship to Co-PI/NVC conference at Thomas Nelson CC/NASA Langley, Hampton, VA
- Sponsorship to Hi-TEC Conference, Denver, CO
- Provost briefing and Cert*TEC*® testing center setup for Basic Electricity and Electronics, Brevard CC Palm Bay and Titusville campuses
- Training subcommittee participation, Commercial Aviation Composite Repair Committee conference and NDT Forum, Seattle, WA
- Partner college site visit and Cert*TEC*® Basic Composites Examiner presentation, Edmonds CC
- Examiner training, Protoype Integration Facility (PIF), Redstone Arsenal, Huntsville, AL

Cert*TEC*® Basic Composites Examiner Presentation to Gary Coykendall Edmonds CC, Sept. 2012

For Technicians/Certification Candidates: In an effort to reach transitioning veterans, changes to the SpaceTEC® website providing better linkage to Cert*TEC*® credentials has been implemented to provide better visibility at www.careerinfonet.org, the veteran's pathway to leveraging military training to industry credentials. Additionally in late February 2013, a new program was underway for Brevard Community College Aerospace Technology students at SpaceTEC® HQ providing internships and on-the-job learning opportunities in composites manufacturing, electronics testing and inventory management.

Issues: Examiner involvement continues to be a concern. Development of an annual audit program for STE and CTE kits was implemented this period and an annual Examiner webinar to refresh the examination process will be completed soon.

2012-2013 PERFORMANCE REPORT: *SpaceTEC® Aerospace National Resource Center*

Goal 5: Expand Performance-Based Technician Credentialing

While the U. S. human spaceflight program remains dependent on flights to the International Space Station using Russian rockets, the commercial aerospace industry is growing. The needs for technician support have changed, spurring work to broaden the base of SpaceTEC® activities for performance-based technician credentialing. Again this year, new partners, new products, and new pathways offered opportunities to utilize performance-based certifications for aerospace-related STEM disciplines, and we have moved forward in the areas shown in this table:

CERTIFICATION activities in SpaceTEC® & Cert*TEC*®	SpaceTEC® Core	SpaceTEC® Concentrations	Cert*TEC*® Basic Electricity & Electronics	Cert*TEC*® Composites
TOTAL ATTEMPTS	4	5	158	6
CERTIFICATIONS	4	4	100	6

Score:

86

New Partners: New SPI agreements with Abaris Training, ATK, Eastern Shore Community College, and Science Technology Corporation (STC) are helping to expand the certification network under both SpaceTEC® and Cert*TEC*®. Through our partnering agreement with Tennessee Technology Center-Hohenwald, we plan to create BEE testing centers at key locations throughout the state's 27 centers. A similar agreement is being discussed with Western Technical College in Wisconsin to open up new BEE testing centers throughout their community college system.

Greg Mellema Cert*TEC*® Basic Composites Practical Exam, PIF, Redstone Arsenal, AL

New Products: As we continue to grow the Basic Electricity and Electronics certification, a new Industry Aptitude Survey (IAS) in BEE has been developed. This IAS can be offered individually in DC, AC, Analog and Digital or can address overall skills in a Comprehensive-BEE IAS. The Composite Certification under the CertTEC® brand also continues to grow. Two new testing centers have been established, one in the WATR (Washington Aerospace Training & Research) center in Washington State and a second at the U.S. Army's Engineering Center (AMRDEC) Prototype Integration Facility (PIF) located at the Redstone Arsenal, Huntsville, AL.

New Pathways: SpaceTEC® continues to capitalize on the Aerospace Core & all three Concentrations as it works to roll out stand-alone certifications in Structures & Assembly, Sheet Metal, Advanced Composites, and individual "Task Certifications". Offered in conjunction with the recently obtained NASA Training Repository – containing training and credentialing materials from 50 years of U. S. Space Program best practices and lessons learned – performance based "Task Certifications" will be offered. Examples are *Torque & Safety Wiring, Electrical Bonding, Fiber Optic Connection*, and similar skills in many disciplines. SpaceTEC®/ Cert*TEC*® staff are in discussions with the International Brotherhood of Electrical Workers (IBEW) and their apprenticeship program for credentialing of electrical workers. Discussions are underway with the National Association of Manufacturer's Management Institute for "stackable credentials". An updated re-certification program and the ***SpaceTEC® Operations and Quality Manual*** have been implemented, and the new ICAC ISO 17024 accreditation will enhance all certifications.

2012-2013 PERFORMANCE REPORT: *SpaceTEC® Aerospace National Resource Center*

Rubrics for Scoring the 2012 NRC Performance Goals:*

Goal 1: Expand the National Repository for Aerospace Education

- The Repository collection is comprehensive and growing. It covers all the primary technical areas of Curriculum, Certifications, Best Practices, and Lessons Learned……30%
- Materials are organized for ease of identification and use……25%
- Dissemination via several modes of access: online viewing, downloads, real-time chat, help requests…. 25%
- Content is reviewed regularly for currency and relevance……20%

Goal 2: Increase NRC Activities/Enrollments in Certification-Related Activities

- Include KSIs, Prep Courses, Recognitions/Outreach, Workshops, Webinars, Conferences…….……...30%
- Increase offerings in at least three of the six areas by one or more activity per year……..……...…….30%
- Provide year-to-year growth in participants in four or more of the areas by at least 5%…….…….....40%

Goal 3: Maintain/Expand the Network of Partnerships for Technician Credentialing

- Maintain an advisory infrastructure with representation from government, industry, and academia……...30%
- Review/update partners and agreements to assure support from SMEs in key technology sectors.....……40%
- Identify/promptly resolve issues and concerns raised by oversight groups/advisory committees.…..…….30%

Goal 4: Promote/Offer Professional Development for Educators and Practitioners

- Provide supporting materials and opportunities for educators, examiners, and practitioners……...30%
- Link career pathways to academic credits and workplace competencies for credentialing.....……40%
- Sponsor and support outreach, recognition, and workshops in at least five locations annually……...30%

Goal 5: Expand Performance-Based Technician Credentialing

- Provide at least two new credentialing products or two new partners or locations each year……..40%
- Provide year-to-year growth of 5% in SpaceTEC® and/or Cert*TEC*® direct-to-certification credentialing.…40%
- Develop and promote stackable credentials that link to career pathways for each SPI product……..……20%

*Delphi Scoring Method "Analysis for Smaller Groups" www.creatingminds.org

The Year in Review - Outreach and Activities

Fifth Annual Aerospace Technician Recognition Event

On April 27, 2012, Calhoun Community College, in conjunction with SpaceTEC® and several local aerospace companies, honored outstanding aerospace technicians during the 5th Annual Aerospace Technician Recognition Awards dinner. The highlight of the evening was the recognition of each sponsoring company's Aerospace Technician of the Year and the presentation of the 2012 Regional Aerospace Technician of the Year honoree, selected by representatives from each sponsoring company. Winner of the 2012 North Alabama Regional Aerospace Technician of the Year award was Eric Williams with ERC, Inc.

SpaceTEC® Headquarters Relocates

To achieve our goals and to reach out to a much greater audience, our SpaceTEC® operations have moved from the Kennedy Space Center and Cape Canaveral Air Force Station to the city of Cape Canaveral. This move was prompted by our desire to serve a much broader audience in tough economic times and the need for greater access for those seeking performance-based credentials in non-aerospace activities.

The Year in Review - Outreach and Activities

Grainger Donation

A discussion while purchasing supplies for BCC's Aerospace Program between SpaceTEC's program manager Steve Kane and Grainger's Melbourne, FL branch Manager Nick Perkins led to a $20,000 donation to outfit the Composites Lab in the Cocoa campus' new STEM building with a vacuum oven. This generous gift will greatly enhance the capability of the Lab in the areas of honeycomb structures and pre-impregnated fabrics.

Newly Certified Veterans

Congratulations to the graduates of the Veterans Assembled Electronics (VAe) program who recently earned Cert*TEC*® performance certifications in Basic Electricity and Electronics: Croy Goins, Bill Neu, Steven Vaughan, Ron Wiesen, Frank Wouters Jr., and Jonathan Broughman.

The Year in Review - Outreach and Activities

SpaceTEC® Partners Inc. Gains International Accreditation

On August 29, 2012, the International Certification Accreditation Council (ICAC) granted a program certificate of accreditation to SpaceTEC Partners, Inc. (SPI) confirming compliance with ISO 17024: General Requirements For Bodies Operating Certifications Of Persons. SPI has, since 2002, operated SpaceTEC®, the National Science Foundation National Center for Aerospace Technical Education. SpaceTEC® provides the only national hands-on performance-based certifications for aerospace technicians.

The International Certification Accreditation Council is an alliance of organizations dedicated to assuring competency, professional management, and service to the public by encouraging and setting standards for licensing, certification, and credentialing programs internationally.

SpaceTEC® Composites Examiner Workshop

Steve Kane traveled to Tulsa, OK in June as SpaceTEC® partner Tulsa Technology Center hosted a three-day workshop event in advance of deploying the Composites certification. The newly created Composites Subcommittee, including partner and industry/military representatives, worked through many issues and progress was made laying the groundwork for administration of the Composites certification. In addition, industry, faculty and potential examiners were put through their paces in a 20-hour Composites workshop introducing the certification exam topics. This was an important first step for some who are working toward designation as SpaceTEC®/Cert*TEC*® Composites examiners.

The Year in Review - Outreach and Activities

VetTEC™ - Opening Pathways to Jobs for Returning Veterans

VetTEC™ is a program implemented by SpaceTEC® specifically designed to open career pathways for veterans. The key to success in workforce technical education is matching skills and competencies to employer needs. VetTEC™ links the service experience and skills of returning veterans to credentials for civilian jobs that match their Military Occupational Specialties (MOS).

NASA Rocket Workshop

SpaceTEC® hosted a Rocket Workshop in July. The two part workshop for advanced rocketry for NASA employees involved both classroom instruction and rocket build. The first phase, "Introduction to High Power Rocket Design, Construction, and Flight," consisted of 20 hours of classroom instruction. The second phase, "High Power Rocket Construction," consisted of 20 hours in an industrial shop setting.

The Year in Review - Outreach and Activities

Knowledge Skills Inventory

Bill Fletcher, an Aerospace Technology Instructor at Brevard Community College and SpaceTEC® Co-PI, administered SpaceTEC® KSIs for Aerospace Core and Composites to students to measure before and after results of their classes and the program. Based on the measured results, improvements to the program can be made.

Industry Aptitude Surveys

The Cert*TEC*® Industry Aptitude Survey (IAS) is derived from the SpaceTEC® aerospace certification program for technicians. It is an index summarizing knowledge in five key areas – Applied Mechanics, Basic Electricity, Industrial Safety, Materials & Processes, and Tests & Measurements. It covers hands-on skills essential for shops, labs, and operations used in many industries. IASs can be customized for individual companies or specialized groups where needed.

The Year in Review - Outreach and Activities

The WATR Center

Edmonds Community College's Washington Aerospace Training and Research Center has been noted as an exemplary national workforce development program. The Center opened in June of 2010 to provide flexible and nimble training opportunities in manufacturing, avionics, and composites to meet the fast-paced needs of the aerospace industry. The training center offers an Aerospace Manufacturing Core Certificate and an Aerospace Assembly Mechanic Certificate. Credits for both certificates count toward a two-year Manufacturing and Materials Technology Associate of Technical Arts degree or a Materials Science Technology Associate of Applied Science-T (transfer) degree at Edmonds Community College. Students begin online with the Aerospace Manufacturing Core Certificate and then have an onsite assessment of the course material. Upon completion, students enter the Aerospace Assembly Mechanic Certificate, which includes three weeks of online training and four weeks of hands-on training at the WATR Center. Completion of both certificates takes approximately 11 weeks.

Calhoun Community College to Work with Boeing Technicians

Calhoun Community college is offering a Readiness Course to help Boeing technicians prepare for the SpaceTEC® Core Certification. The course will be customized based on results from an initial Knowledge and Skills Inventory.

The Year in Review - Outreach and Activities

Brevard Community College Campuses to Offer Additional Certifications

An initiative is underway to bring added value to Brevard Community College (BCC) programs by setting up Cert*TEC*® Basic Electricity and Electronics (BEE) examination stations on campuses in Palm Bay, Cocoa, and Titusville, FL. In a briefing to the campus Provosts, SPI proposed that in return for space for a computer station with internet access, availability of the instruments necessary for BEE examinations and a test proctor, SPI will place Nida student trainers and examination circuit card sets in locations designated by each host campus to make the certification available to BCC students and local applicants interested in obtaining the credentials.

In addition to Cert*TEC*® examinations, SPI will be working with the designated points-of-contact to also make available Electronics Technician Association - International (ETA-I) credentials focusing primarily on consumer electronics, fiberoptics, and workforce readiness and the National Center for Transportation Technology (NCATT) credentials focusing primarily on aviation electronics (electrical distribution, communications, navigation, and FOD/FOE) once the sites are operational. Cert*TEC*® examination centers that provide credentials meet BCC's president, Dr. James Richey's Goal 2 - Make Students Ready for the Job Market.

An added feature of this proposal will also provide Industry Aptitude Survey (IAS) customizable online assessment tools through campus learning centers to the local workforce and prospective BCC students.

Composites Examiner Certifications

While in the Seattle area in September, Steve Kane presented the Cert*TEC*® Basic Composites Examiner certification to Mr. Gary Coykendall, MATed Composites and Additive Manufacturing Project Manager. MATed is the NSF ATE National Center for Materials located at Edmonds Community College's Lynnwood campus. Gary is also a SpaceTEC® Examiner for both the Core and Composites certifications and has been at the forefront of the development efforts for both the SpaceTEC® and Cert*TEC*® Composites credentials since their inception.

Terry Sampson, Jonny Callahan, Dushyant Arora, and Greg Mellema have also received their Cert*TEC*® Composites Examiner Certification.

The Year in Review - Outreach and Activities

Partnership Success Continues

NASA Langley Research Center (LaRC) and Thomas Nelson Community College (TNCC) partnered to develop a pipeline of highly skilled technicians using a program that integrates education, certification and apprenticeship. The TNCC – NASA Cooperative (co-op) Education Program is a pipeline for the development of a highly qualified technical workforce for NASA LaRC and the Commonwealth of Virginia. The TNCC two-year associates degree, along with the SpaceTEC® Certified Aerospace Technician™ credential, were adopted to reinvigorate and improve the NASA LaRC technician co-op program in 2007. Of significance, SpaceTEC® certification is required to continue at NASA LaRC as an apprentice. Since 2007, 19 NASA LaRC co-op students and one on-site NASA LaRC contractor have earned the Certified Aerospace Technician™ credential. Of those, 14 have been admitted into the NASA LaRC Apprenticeship program, four transferred into the NASA LaRC Engineering Cooperative Education Program, and one was hired by an on-site contractor. These students are all currently performing at high levels, providing advanced technical support in NASA LaRC's laboratories and facilities.

Tennessee Technology Center's Hohenwald campus Offering BEE

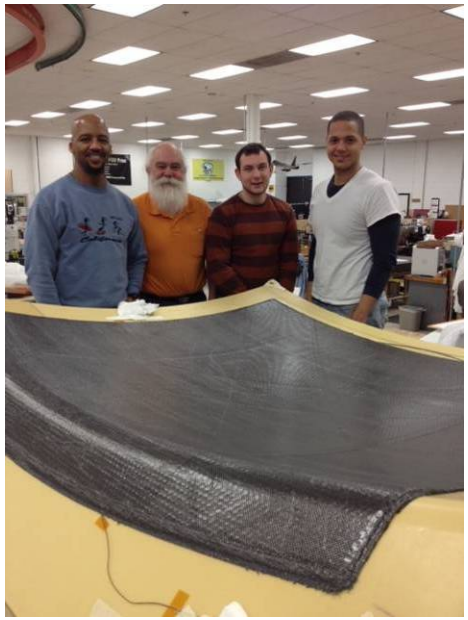
Tennessee Technology Center – Hohenwald campus has completed pilot testing of the Cert*TEC*® Basic Electricity and Electronics (BEE) online performance-based certification and is now providing BEE credentials as outcomes to students in the Electronics Technology and Electro-Mechanical Technology programs. Upon successful completion, students receive nationally-recognized certifications in the areas of DC, AC, Analog, and Digital Electronics.

The Year in Review - Outreach and Activities

Students from BCC to Intern at SpaceTEC®

A new Service Learning (internship) opportunity has been undertaken at SpaceTEC® HQ for students enrolled in the Aerospace Technology program at Brevard Community College. To enroll, students are recommended by instructors, interviewed by SpaceTEC® management and supervision is provided by SpaceTEC® staff. When selected, opportunities to learn in a workplace setting are provided, with emphasis on proper timekeeping, safe work practices, tool control, production techniques, electrical/electronic testing and inventory management processes, all part of the Aerospace Technology curriculum.

SpaceTEC® Certified Aerospace Technicians™ Working in Composites



Certified SpaceTEC® technicians, Matthew Hayes and Kevin McLain (pictured), with mentors Kelvin Boston and Donald Smith, all from the Aerospace Composite Model Development Section, Engineering Directorate, NASA Langley, Hampton, Virginia, are fabricating MSA Diaphragm panels. These composite panels are critical for Langley in establishing an on-site capability to produce aerospace qualified composite materials and test articles. Towards this, the technicians are supporting the fabrication of dozens of quality sensitive composite panels (test specimens) for process development and materials characterization. Concurrently, they are also supporting the manufacturing development of a large test article, Pathfinder. This effort has enormous potential to establish Langley as a Center of expertise in large composite flight test article fabrication and testing, ultimately contributing to current and future NASA aerospace and exploration missions.

The Year in Review - Outreach and Activities

Inspiring Middle School Students to Consider High Tech Careers

On Saturday, February 23, 2013, SpaceTEC® Certified Aerospace Technician™, Allen ”AJ” Jackson, participated in the Governors Academy for Innovation Technology and Engineering (GAITE) program held at Canon Virginia, Newport News, Virginia. Mr. Jackson introduced over 80 middle school students from seven school districts in the Hampton Roads area to 3-D printing, solar cells, and smart materials. Towards this, the students competed in solar car races, made wearable ultra violet bead bracelet detectors, and learned about 3-D printing as a method to fabricate hardware and evaluate form, fit and function.

External Evaluator's Summary Report

SpaceTEC® Conducted 5 surveys in 2013 with respondents having an excellent cross-section of responsibility, from senior leadership in education and aerospace/aviation to working technicians. All were very knowledgeable about the SpaceTEC® program. Findings are summarized as follows:

1. SpaceTEC® Education Partners and Affiliates — Survey Findings (2 surveys):

7 respondents--CO-PI's/partner colleges and affiliates

- SpaceTEC® membership has helped partners build strong aerospace programs and especially strengthen connections to local aerospace industry
- -Students in SpaceTEC® program have benefitted with co-op and internship programs and employment opportunities after graduation and also articulation opportunities to higher education.
- -Partners are interested in working with Cert*TEC*® on Electrical and Composites certification programs.

2. Commercial Space Transportation Needs — Survey Findings

10 respondents in all phases of space exploration--vehicle design, manufacturing, payload, and launch operations.

- 80% consider testing of technician competency important to their work
- 30% plan to certify their technician workforce in the next 3 years
- 70% would use a survey of knowledge/skills to screen candidates for jobs, identify training needs, or promotion.

External Evaluator's Summary Report

3. SpaceTEC® Certified Technicians — Survey Findings

68 certified SpaceTEC® technicians including 21 with concentration certificates--10 vehicle processing, 6 composites, 5 aerospace manufacturing

- 75% responded favorably when asked the value of their SpaceTEC® Certificate
- Future Skills Needed--#1 Systems/trouble-shooting, #2 Composites, #3 Manufacturing, #4 Facilities Management
- Future Career Plans--70% continue education--#1 Obtain a degree
- Help Needed from SpaceTEC®--Assistance in Job search; communicate value of SpaceTEC® certificates to wider number of aerospace employers

4. Aerospace Employers — Survey Findings

11 respondents from senior executive levels to working technicians, (all very knowledgeable about SpaceTEC® program)

- 91% consider the performance measurement of the SpaceTEC® certification process very important, especially for objective skills identification and professional career development for the technicians.
- 36% are already using the SpaceTEC® Knowledge/Skills Inventory to assist in qualifying candidates for hiring decisions or future training plans?
- Get the word out to ensure that this certification is important to companies in the industry. Endorsements from a wide-range of technical companies would help SpaceTEC's value.

Where We're Headed in 2013-14

Plans For The Coming Year

1. Make operational the NASA Shuttle education materials for repository use (navigation, SMEs, control systems, logging and distribution). **Approach: Archive separately for controlled use; recruit SMEs to consult/link with requesters.**
2. Utilize the NASA/USA Shuttle technician credentialing materials to package "mini-certs" suitable for commercial space industry applications. **Approach: Package task-level certs with kits for individual applications/uses. Market widely.**
3. Secure agreements/partnerships with key commercial space organizations to pilot/adopt performance-based workforce credentialing. **Approach: Target a company to pilot an "unbundled" certification tailored to their specific needs.**
4. Review partner college program needs for revision and update of curricula and instructional materials for core and concentrations. **Approach: Conduct audits w/matrices to determine status; modify/update programs as needed.**
5. Implement a program accreditation process to verify/qualify instructors and curricula used in SpaceTEC®/Cert*TEC*® credentialing. **Approach: Coordinate task 4 results to identify needs and pilot faculty professional updates.**
6. Create systems to credential veterans by matching their service MOS skills and competencies to civilian technician job needs (VetTEC™). **Approach: ID/partner with military contacts for joint activities to credential returning vets.**
7. Initiate hands-on credentialing programs to provide performance-based career pathways for program graduates in non-aerospace fields. **Approach: Use results from task 2 to pilot programs at partner colleges for local employers.**
8. Partner with the NAM Management Institute to create/implement performance-based skills certifications as stackable credentials. **Approach: Use results from task 2 to develop/implement 'stackable credentials' via MI's network.**
9. Streamline the quality assurance program to test/re-certify examination cards/equipment for use in credentialing candidates. **Approach: Automate testing/recertification of BEE cards and field test for reliability/marketability.**
10. Emplace certification programs at NSF ATE Centers/Projects where SpaceTEC®/Cert*TEC*® credentials will enhance technician job placements. **Approach: Use results from task 2 to ID/partner with ATE Centers to implement task performance credentialing at sites where employers need hands-on skills. Re-apply for Cert*TEC*® funding.**

What We Need To Succeed in 2013-14

- Early National Science Foundation notification of award of the SpaceTEC® National Resource Center four year grant renewal (May/June 2013).
- **The current SpaceTEC® NSF grant expires in August of this year. Due to the threat of sequestration and the state of the economy, there may be delays in funding ATE grants.**
- **Since our budgets are largely committed, so care must be taken not to overrun our current funding for the next six months. Additional sources of funding need to be identified and pursued.**

- Recognition of the need for and value of SpaceTEC®/Cert*TEC*® credentialing by management in all participating organizations and beyond.
- **For the past three years our surveys of current certified aerospace technicians have included comments regarding the general acceptance of our credentials by employers. The impact of the NASA Shuttle Program layoffs has exacerbated the loss of senior managers familiar with the program.**
- **Help is needed in gaining the attention of newcomers to the aerospace industry and commercial space industry organizations that utilize aerospace technicians in hands-on work.**

- College partner support for items 4-7 in the list of tasks planned for the coming year, as well as commitments for invigorating current programs and initiating non-aerospace credentialing.
- **Joint program reviews may identify revisions required in curriculum and faculty requiring professional development support. These must be met promptly to preserve the integrity of the program.**
- **Task-level certifications should be considered for returning veterans and non-aerospace STEM career fields.**

- Industry partner support in promoting SpaceTEC®/Cert*TEC*® credentialing in commercial space, aviation, and related technology fields.
- **Promotional activities can include anything from paid sponsorships and internships to paid positions for students and graduates. Examples include website links, posters, and briefings to supervisors and HR.**

- Identification of funding opportunities by all participants at any level – state and federal grants, private enterprise sponsorships, etc.
- **To grow the program, we must find additional funding from suitable sources, including grant programs, fees from exams and prep courses, scholarships for credentials, contracts for KSIs/IASs, etc., and sponsorships.**