



FAA WILLIAM J. HUGHES TECHNICAL CENTER

SHAPING AVIATION'S FUTURE -- CREATING POSSIBILITIES AND PROVIDING INTEGRATED SOLUTIONS

Volume 5, Issue 7-8

July/August 2002

A MESSAGE FROM THE DIRECTOR



Our current focus at the Tech Center as a result of September 11 and the realignment has given us a challenge that is like none other we have ever experienced in the lifetime of this facility. The flying public and our aviation partners have placed some enormous

demands upon the federal government over the past 12 months. They are looking to us for answers. They want new programs, new equipment, new procedures, and a guarantee of safer skies. Realistic timelines often get left on the cutting room floor as we are compelled to respond to the demands of an anxious public that is accustomed to immediate gratification and an instantaneous resolution to their concerns.

That is why we are directing our efforts to not only reach the business goals we established during our reorganization, but also to identify how those goals can intermingle with the Homeland Security mission. The resources we have at our command at the Tech Center are valuable tools that can certainly help to build an infrastructure that will enhance the security of our entire nation. We are one of the few places that has the people and talent that are so crucial right now in the development of an aviation system that can meet the demands of the flying public. We keep aviation safety paramount in our minds as we strive each day to develop new technology, new services, and new ways of thinking that will enhance the safety level of our customers.

Representatives of the Tech Center have been

participating in quarterly, brainstorming sessions hosted by Senator Robert Torricelli and Senator Jon Corzine to identify our resources and how to better utilize them in our fight against terrorism. We were joined in these meetings by eleven other state and federal agencies, who all want to help "make a difference" with their contributions to the safety and security of the American people.

The focus of our daily efforts has expanded to include not only the mechanical and technical components of aviation, but also the non-tangible and sometimes elusive communications network that has so often been blamed for the surprise attack on America. We currently are investigating the possibility of developing and managing a data repository system that would be linked with at least a dozen other government entities in an effort to share information in a timely manner.

Our efforts at the TC have certainly taken on a new direction as a result of September 11 and the reorganization of this facility. These two events have placed us in a position of great value to the people of this country and to the world. We are one of the few places that has the people and talent that are so crucial right now in the development of an aviation system that can meet the global demands of the flying public.

We are now collaborating with our European partners in aviation in an effort to identify ways to enhance air traffic management systems that will meet the needs of the flying public five to ten years down the road. We now have added an additional layer of security awareness among our plans of action.

Our responsibilities to the American people have

CENTER SALUTES EMPLOYEES!



On June 25, amidst a colorful array of red, white, and blue flowers, streamers, and stars, the Tech Center held its 25th Annual Awards Ceremony, saluting the hard work and dedication of

its employees.

"Patriotism," was the theme for this year's ceremony. Examples of this could be seen throughout the Tech Center, from the wall decorations, and star span-gled necklaces and fans, to the patriotic attire seen throughout the facility.

Speaking to an auditorium overflowing with employees, family, and friends, **Anne Harlan**, Center Director, said in her opening remarks, that in light of the tragic events of September 11, it was critically important that "we take time to honor our own" this year. Anne cited how Center employees went above and beyond the call of duty after September 11. She expressed her pride in the Center workforce, and commended all for a job well done.

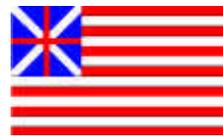
After a beautiful rendition of God Bless America by **Chinta Roundtree-Coleman**, Masters of Ceremony **Tony Wilson** and **Dave Fabry** warmed the audience by poking fun at one another and at Center Deputy Director **Bruce Singer**. With the audience primed and ready to go, **Rosanne Weiss**, nomination team lead, took the podium and explained the 'nuts and bolts' of the awards program.

The Center Awards Program is unique in that it is entirely employee run. As Rosanne explained, "suc-

cess comes from its structure," in which anyone can be nominated and anyone can nominate someone else. Rosanne said that the committee received 59 nominations this year, nominating 200 employees.

A few new additions were made to this year's program. Two new award categories debuted this year: Unsung Hero and Nontechnical Team, and now, for the first time, selectees could receive time off or cash awards.

In celebration of the Employee Awards Programs silver anniversary, and in memory of the fallen heroes on September 11th, the 177th Fighter Wing Base Honor Guard performed a historical flag ceremony. MSgt. Arnie Karp narrated this moving presentation. Posting of the colors followed.



This year's host committee included: **Dot Buckanin**, award program lead; **Pat Mabis**, host team lead; **Ken Beisel**; **Mary Granese**; **Rich Morton**; **Marlene Gunn**; **Allan Oswald**; **Ginger Cairnes**; **Lana Haug**; **Donna Taylor**; **Holly Cyrus**; **Judy Huggard-Gallagher**; **Ella Terrell**; **Carl Genna**; and **Stephanie Zvanya**. The nomination team included: **Carol Cruse**; **Kathy Heunset**; **Patty Naegele**; **Holly Cyrus**; **Al Kopala**; **Carolyn Pokres**; **Marlene Gunn**; **Barbra Mong**; and **Rosanne Weiss**.

Congratulations to the following employees who were selected by their peers for special recognition at this year's ceremony.

AND, THE SELECTEES ARE . . .



Rich Lyon

Publication of the Year

Presented to the author of a technical report, article, or scientific document judged best by the Awards Committee. These publications may address research and development, test and evaluation, or other technical fields, which contribute to success of the Center's mission.

and

Innovator of the Year

Presented to the employee who demonstrated willingness to get the job done, accept challenges, was open to new ideas, and was willing to take risks in solving a problem or attaining goals.



Douglas Crispell

Leadership

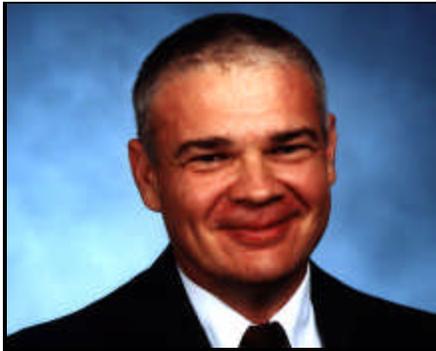
Presented to the employee whose actions demonstrated the ability to work as a member of a team; empowers his/her fellow employees; provides necessary guidance for overcoming obstacles in achieving program goals, and acts as a role model for other employees in the areas of integrity, accountability, and customer satisfaction.



Gordon Hayhoe

Employee of the Year

Presented to an employee judged to best exemplify the spirit and purpose of the Center through contributions made toward project or program goals or overall mission accomplishment.

SIMPLY THE BEST!**Ken Beisel****Unsung Hero**

Presented to the employee whose everyday behind the scenes efforts went beyond expectations to help lead to the outstanding success of a program or project.

**Donald Marple****Field Support**

Presented to the employee/s judged to have made a substantial contribution to either the improvement or the continued operation of the National Airspace Program.

**Thomas DeFiore****Technical Program**

Presented to the employee of a technical program team or effort judged to have a major contribution, or to have been instrumental in the accomplishment of the technical program and the Center's program goal.

**Scott Matusek****Technical Support**

Presented to the employee in a technical support role judged to have made a significant contribution to the successful accomplishment of a project or program.



Alexander Storoz

Administrative Support

Presented to the employee in an administrative support role judged to have a substantial contribution to the overall success of any Center activity



Frannette Bourne

Model Work Environment

Presented to the employee of the William J. Hughes Technical Center judged to best exemplify or excel in sharing the responsibility for ensuring the accomplishments of diversity, affirmative action, and equal employment opportunity to create a more productive and hospitable workplace.



Lori Lee

Secretary of the Year

Presented to the employee judged to have achieved an outstanding level of accomplishment and excellence in the secretarial field.



Rosanne Weiss

Community Outreach

Presented to the employee who has provided to the Center or Community, volunteer service characterized by uncommonly high levels of dedication, commitment, and personal sacrifice resulting in a significant contribution.

A JOB WELL DONE

Tracey Britsch
William Hamilton
Eric Sarandrea
Donald Anderson

R. Scott McShaffrey

(photo not available at this time)

Technical Team

Presented to the group of employees who, through their actions as a team, is judged to have made a significant contribution towards accomplishing a project and/or operation in fulfilling the Technical Center's mission.

Christine Greco
Janet Kinsell
Carolyn Donohue
Julia Lee
Deborah Krumaker

(photo not available at this time)

Nontechnical Team

Presented to the group of employees who, through their actions as a team, is judged to have provided an outstanding effort above and beyond everyday expectations in performing behind the scenes service work necessary to make an organization function successfully.



Larry Michael
Terry Parker

Director's Award



Carl McCullough

Friend of the Center

RECOGNIZING ACB'S INTERNATIONAL EFFORTS

During this year's Tech Center Award ceremony, Ted Davies and Dave Burkholder from the Office of International Research and Acquisitions (ASD-500), recognized several employees from the Office of Innovation & Solutions (ACB) for their outstanding and exceptional support to numerous FAA/ARA international activities and initiatives.

Those receiving plaques included the Solution Development Division's Wide/Local Area Augmentation System Group (ACB-430):

- **Tom Dehel**
- **Jean C. Geffard**
- **Joan Grelis**
- **Frank Lorge**
- **Tom McHugh**
- **Dave Nelthropp**
- **Frank Persello**
- **Joe Sheftic**
- **Bill Wanner**

The Real & Virtual Environment Division's Flight Program Group (ACB-870):

- **Keith Biehl**
- **John Birney**
- **Armando Gaetano**
- **John Kaegi**
- **Ralph Pohl**
- **John Tatham**
- **Larry VanHoy**

The ACB-Supported ARA International Activities included:



- test bed avionics.
- c. Conducted several ionosphere data collection trips.
- d. Conducted ionosphere flight tests and data collection in Brazil using the FAA B727.
- e. Supporting Brazil and Latin American region with technical leadership on GPS and

WAAS ionosphere research.

1. ICAO Regional Project for Latin America:
 - a. Supported FAA delegations at ATM/CNS Implementation & Coordination SubGroups and associated GNSS Task Forces meetings.
 - b. Supported multiple FAA meetings and training events with Latin American civil aviation representatives in an effort to plan and implement a GNSS augmentation test bed in the region to conduct test and analyses to determine an operational GNSS transition strategy.
 - c. Conducted a test bed reference station (TRS) installation and training program in Argentina.
 - d. Hosted a week-long test bed operations training for 13 Latin American countries and organizations.
2. FAA/Brazil Joint Satellite Navigation Program Support:
 - a. Purchased, tested, and assisted with the implementation of a Brazilian WAAS testbed capability.
 - b. Assisted Brazil with the purchase and installation of WAAS
3. Mexico:
 - a. Coordinated the installation and implementation of Mexico WAAS test bed reference stations.
 - b. Conducted ionosphere and WAAS flight tests in Mexico airspace.
 - c. Supported several FAA/Mexico bilateral satellite navigation technical meetings.
4. Asia Pacific Economic Cooperation (APEC) GNSS Implementation Team (GIT):
 - a. Provided support to FAA initiative to promote the implementation of regional GNSS augmentation systems in the Asia Pacific region through education and the establishment of a regional WAAS testbed capability.
5. FAA/India Bilateral Efforts:
 - a. Supported the execution of a FAA GPS Technical Workshop in India to promote the use of U.S. satellite navigation systems technology in the region.

CELEBRATING



EXCELLENCE



IMPLEMENTING THE BALANCED SCORECARD

Since the reorganization of the ACT organization into five offices several months ago, many employees have asked themselves, "What is the strategy behind this organizational change, and how will it affect my everyday work?" The Strategic Leadership Team, working with a group of employees from across the ACT organization, is in the process of implementing a new management tool that will enable the entire Tech Center organization to understand and get behind our new strategy and structure. This tool is called the Balanced Scorecard.

BALANCED SCORECARD

Dr. Robert Kaplan and Dr. David Norton of the Harvard Business School developed the Balanced Scorecard in the early 1990s. This concept is based on research that they did with a number of leading corporations. Since then, the Balanced Scorecard has gained great acceptance in both the private and public sector. *Harvard Business Review* recently named it as one of the 100 most influential management ideas of the 20th century. The approach gains its strength from its flexibility and simplicity.

SCORECARD HELPS KEEP AN ORGANIZATION FOCUSED

The Balanced Scorecard will take the Center's high-level strategy and translate it into a set of operational objectives that will drive our actions across the entire

organization. The Strategic Leadership Team will assign measures and targets to each of the operational objectives on the Balanced Scorecard to track how well we are achieving our strategy.

The scorecard works because it is a tool for getting an organization focused—focused on the right things. It does this by encouraging the organization to adopt a limited set of measures, linked to the strategy as means of gauging success. It also focuses the organization on the right things, by ensuring that objectives and metrics are created across a "balanced" series of perspectives that represent the different management concerns and constituencies within an organization.

ACT LEADERSHIP TEAM IS CREATING OBJECTIVES

The ACT Strategic Leadership Team is creating objectives across five perspectives:

- Stakeholders -- How will we meet our stockholder's needs?
- Customers -- How will we meet our customers' needs?
- Financial -- What financial objectives must we meet to sustain the Technical Center?
- Internal -- What internal processes must we improve to meet our financial, customer, and stakeholder goals?
- Learning and Growth -- What skills, capabilities, culture, and knowledge and information must we develop to accomplish our goals?

ATB, ENROUTE IPT ALREADY ARE USING THE SCORECARD

Many agencies in the Federal Government are now beginning to implement this approach. For example, our colleagues in the EnRoute IPT and ATB have been implementing the Balanced Scorecard over the past year and have found great value in the approach. The Balanced Scorecard will be a key element in making the Technical Center a more performance-oriented, exciting, dynamic place to work.

Anne Harlan, Center Director and the Executive Sponsor for the Balanced Scorecard effort, recently commented, "Implementing the Balanced Scorecard is an important step in keeping us on track and measuring our progress toward our goals, which include greater impact on the aviation community, greater revenue with high customer satisfaction and being the place where everyone wants to work."

The Balanced Scorecard also will help the Tech Center align itself with the future direction of the FAA. In her testimony in March to Congress, former FAA Administrator Jane Garvey highlighted the FAA's emerging "more business-like approach," and made the following comments on the new Air Traffic Organization that is under development. "The ATO will be a performance-based air traffic services organization. It will commit to clear objectives, specific measurable goals, cus-

STACEY HAMILTON WINS PRESTIGIOUS AWARD



Stacey Hamilton (ACB-250) is one of 30 winners of the 2002 Women of Color Government and Defense Technology Awards.

Stacey, an electronics engineer, was honored for her outstanding contributions in community service, at the organization's second annual awards conference, in Washington, DC, on July 18-19. Winners were picked from corporations and government agencies across the country.

She has led and volunteered in many programs to encourage youth of color to pursue careers in the fields of math, science, engineering, and technology, while fostering development of students' self esteem, leadership skills and positive life choices.

"Stacey Hamilton is most deserving of this special honor," said Technical Center Director Anne Harlan. "Her tireless efforts in leading and motivating youth to reach their highest potential make her a true role model in the FAA."

As the National Society of Black Engineers regional chairperson for the Try-Math-A-Lon, Stacey led area inner city students

to victory in the 1999 national mathematics tournament. This involved planning and organizing local math competitions, and coaching the winning team through the local, regional and ultimately national tournament, in Kansas City.

Stacey also has actively participated in the FAA's Technical Youth Program and Historically Black Colleges and Universities cooperative education programs, providing opportunities for young adults to gain work experience in technical fields, and be supported by highly-qualified mentors.

She serves as a mentor to students at Oakcrest High School, where she assists them with day-to-day situations, pursuing goals and meeting academic challenges. She also advises students in engineering and other technology related fields. She is a substitute geometry teacher at Atlantic City High School, in support of the Technical Center's education program.

In addition, Stacey has been active in several other volunteer efforts, as well. She works with the Delta Academy Mentoring Program, designed to expose girls to science and technology; she co-chairs the Tiny Tots Cotillion, a program that fosters self-esteem in 5 to 8-year-old children; and she served as a Girl Scout troop leader for six years.

Along with extraordinary community accomplishments, Stacey has excelled professionally. She has received numerous

awards, including the: IEEE/AIAA Engineer of the Year; National Society of Black Engineers (NSBE) Region 1 Member of the Year; NSBE South Jersey chapter president, chapter parliamentarian; Federal Women's Program delegate body member; and more. Hamilton was recently selected for the 2002-2003 Executive Potential Program, sponsored by the U.S. Department of Agriculture Graduate School.

Stacey has been with the FAA for 12 years. She is a technical lead in the Center's Oceanic Test and Engineering Branch. She holds a master of science degree in software engineering from Monmouth University; and a bachelor of science degree in computer engineering from Syracuse University.

Congratulations on Your Achievements!

BALANCED SCORECARD (CONT.)

customer service standards, and targets for improved performance."

The Strategic Leadership Team will develop the Center's Balanced Scorecard in a series of workshops over the summer and anticipate releasing the tool to the Center organization by late August or early September. Beginning in early August, each of the five offices that comprise ACT will develop an office-level Balanced Scorecard, which will align each office's strategy with the overall

Technical Center strategy. Office-level Scorecards will be completed by the end of October.

YOUR HELP IS APPRECIATED!

Many employees at the Tech Center will be assisting the management team in the development of this tool. If one of these employees comes to you with a request, please be as prompt and responsive as possible in providing

assistance.

The Balanced Scorecard is going to become an integral part of

the way we work in the ACT organization. A brief introduction to the concept has been provided here, but there is much more to learn and understand. As a result, the Strategic Leadership Team is making an ongoing investment in training ACT employees on the concept and use of the Balanced Scorecard.

DISABILITY RESOURCE CENTER



DID YOU KNOW the Disability Resource Center

(DRC), Department of Transportation (DOT), Washington DC, can provide reasonable accommodations for disabled employees? The cost of this service is paid for by the Disability Resource Center. Disabled employees or their supervisors can request assistance from DRC for workplace accommodations that will provide them equal employment opportunities. Every manager should be aware this resource is available and take advantage of the assistance the DRC can provide in accommodating their disabled employees.

The DRC will ensure that a Disability Resource Analyst provides an assessment to determine

eligibility for services, identify solutions to workplace barriers, and to help determine reasonable accommodations with the support of the employee's supervisor.

Examples of reasonable accommodations include, but are not limited to:

- Providing or modifying equipment or devices
- Job restructuring
- Part-time or modified work schedules
- Reassignment to a vacant position
- Adjusting or modifying examinations, training materials, or policies
- Providing readers and interpreters
- Making the workplace readily accessible to and usable by people with disabilities

To determine the needs of the

employee, the DRC uses an Accommodation Request Form, which can be obtained through the Disability Resource Center's web page, <http://drc.dot.gov>. If assistance is needed in completing the form, please contact the DRC at: drc@tasc.dot.gov, (202) 493-0625 (Voice) or (202)-366-5273 (TTY).

The Disability Resource Center was created by the Department of Transportation to consolidate the Department's efforts to meet the needs of the disabled. Each agency under DOT contributes budget resources to the DRC.

For more information, you can call **Samuel Wilson** at (609) 485-6249 or **Ken Stroud** at (609) 485-6565, People with Disabilities Co-Program Managers, or the Civil Rights Staff, ACT-9 at (609) 485-6675.

NEW GOVERNMENT-INDUSTRY PARTNERSHIP

The FAA and Boeing are working together in a partnership to find options for increased airspace capacity. The two organizations recently signed a Cooperative Research and Development Agreement (CRDA) to conduct research and analyze models.

The objective of this cooperative effort is to find systems to increase airspace capacity. The FAA and Boeing will also look for ways to increase safety, security, and general aviation access to the nation's airspace system.

The research and development effort was initiated as another future-thinking response to increasing airspace demands. Airspace users are calling for more capacity, access, and fewer operating restrictions. In committing with the FAA to achieving those things, air carriers feel they will be able to increase efficiencies and

“We are focused on the future, on moving our National Airspace System forward in a way that takes full advantage of space-based technology while maintaining a safe and flexible system.” — Charlie Keegan.

cut operating costs. General aviation pilots will also achieve greater access than what they now experience.

The agreement between the FAA and Boeing will provide more effective implementation of the Operational Evolution Plan through modeling -- the ability to test scenarios with many different situations.

FAA Associate Administrator Charlie Keegan said, "We are focused on the future, on moving our National Airspace System forward in a way that takes full advantage of space-based technology while maintaining a safe and flexible system. This partnership will give us another step into the

future by using Boeing's superior technical tools that will enable early simulation of OEP capabilities."

Boeing has used similar tools to model a number of complex projects. The OEP is the FAA's commitment with the aviation community to implement certain systems and processes over a 10-year period leading to airspace capacity gains.

Boeing ATM President John Hayhurst said, "We are pleased to enter into this agreement with the FAA because Boeing shares the FAA's commitment to making the world's best air transportation system even more safe and efficient."

The CRDA is scheduled to run for five years with coordination by the FAA's Operational Evolution staff and administration by the Tech Center. Much of the work will be done at Boeing's Seattle facility.

THE EFFICIENCY EXPERT

You know you've taken your life as an efficiency expert too seriously when you . . .

You ask the waiter what the restaurant's core competencies are.

You decide to re-org your family into a "team-based organization."

You refer to dating as test marketing.

You think that it's actually efficient to write a 10-page paper with six other people you don't know.

You believe every company is "a traditional functional organization, with promotion based on tenure, but one that needs to change as it is facing ever increasing competition..."

You believe you never have

any problems in your life, just "issues" and "improvement opportunities."

You explain to your bank manager that you prefer to think of yourself as "highly leveraged" as opposed to "in debt."

You can explain to somebody the difference between re-engineering, downsizing, rightsizing, and firing people.

SHAPING THE FUTURE GLOBAL AVIATION SYSTEM



Some of the greatest aviation technology minds in the world recently met in Madrid, Spain, at the 3rd

European Symposium on Air Traffic Management for Research and Development. Representing the Tech Center was **Dennis Filler**, Program Director for the Office of Knowledge Management (ACK-1).

This five-day meeting allowed Filler to interact with leading edge researchers from the European Continent to pool ideas and establish strategic partnerships for future endeavors involving the Technical Center's Research & Development (R&D) resources.

The European delegates realized the inefficient use of their airspace had become a constraint on Europe's economic growth and international competitiveness, and they recognized a need to reform the outdated architecture of their air traffic control. Their review of a recent study of air traffic performance in Europe and the United States showed the latter to be capable of handling twice as many flights at almost the same cost as current European operations. Thus, the U.S. delegates from the FAA were most welcome at this symposium.

The first two days of meetings in Madrid were filled with presentations and the establishment of twelve action plans by the FAA and the EURO-

CONTROL R&D committee members. EUROCONTROL is an European organization whose mission is to ensure the safety of air navigation as it oversees air traffic control in its thirty one member nations. It functions as a managing agent, somewhat similar to the FAA, to coordinate a wide portfolio of aviation programs and support activities to improve safety, increase capacity, and reduce costs, while maintaining a respect for the environment. It has no enforcement authority, however, to implement its decisions upon the national governments within its network.

Dennis Filler now has the challenge of identifying how and where the WJHTC can best put its efforts to enhance the U.S. presence in executing these action plans the FAA helped to create. His ultimate goal is to assist this group in producing a set of international aviation standards that can be instituted throughout the European community.

Although each European country currently has its own air traffic control organization, they all share the same challenges of aviation safety, customer service, system efficiency, and the demand for security. The philosophy of this work group is to pool their powers and efforts and by 2004 establish a single European Air Traffic Control offices that will save money, time, and resources. Their aim is to create a seamless, Europe-wide, satellite based air traffic management system that

can safely handle three times as many flights as today in all types of weather, while maintaining a 99% on-time record. They plan to have a 30-satellite network deployed and operational by 2008, which will provide a European platform for advanced aircraft navigation and air traffic management systems.

The final three days of this year's symposium focused upon external technologies for air traffic management. Airspace capacity requirements was the major area of concern noted by the event's co-sponsors that included EUROCONTROL, AENA, and the European Commission. AENA is a private aviation administrator organization in Spain that manages an integrated network of 47 airports and 5 control centers. They experienced a 10% annual increase in aircraft movements in Spain in 2000, and recognize a need for air traffic control capacity to double by 2015 to accommodate their anticipated increase in air traffic.

The European Commission is a network of delegates from the European countries that strives to establish and maintain a framework of regulation and standards designed to generate competition, stimulate the development of new applications, and support initiatives that benefit all European citizens. These groups estimated 350,000 aircraft flight hours a year are wasted due to inefficient air traffic management and airport delays in Europe. The consensus of the participants was that future



improvements in air navigation services depend upon cooperative systems developed by the industry, that can interlink airlines, airports and air navigation service providers on an operational level.

The Center's future involvement with these European partners could mean an endless stream of cooperative efforts that will benefit the Tech Center, the FAA, the United States, and the



entire European aviation community. Dennis Filler will continue to encourage this two-way open door policy as the FAA strives to build a global network of respect and

the Pacific Rim horizon to continue with their quest to share knowledge and technology with other nations.

knowledge sharing that can result in an aviation environment that is superior to all others.

Once a standardized set of international rules has been established for the European countries, Dennis Filler expects the FAA will look towards

AFTIL: A VIEW FROM THE TOP

The Air Traffic Control Tower Cab Simulator at the William J. Hughes Technical Center in Atlantic City, New Jersey, is a view from the top without even leaving the ground!

The cab simulator houses a high fidelity, scenario driven, interactive Out-The-Window Display System (OWDS) that provides a dynamic simulated view of what a controller sees out the window of a tower cab. This simulator utilizes panoramic photographs and computer generated graphics to display any airport planned construction.

It provides photorealistic views of hangars, runways, taxi-

ways, lighting systems, buildings, terrains and city skylines with modeled aircraft and ground vehicles.

The system is directed by interactive scenarios and is equipped with a pseudo-pilot subsystem to control the movements of aircraft and vehicles in response to verbal air traffic instructions. It can simulate aircraft movements to and from the airport for complete enhanced tower evaluation. Air Traffic Control procedures regarding future airfield changes can be evaluated in a real-time environment.

The OWDS which is part of

the Hughes Technical Center's Airway Facilities Tower Integration Laboratory (AFTIL) has viewing area capabilities of 240 degrees with future potential of 360 degrees. The AFTIL is able to create a 3-dimensional airport along with shadow study printouts from new control tower locations.

These airports and shadow studies can be used to evaluate potential tower sites and determine if clear and unobstructed views of the airport surfaces and approach paths are available from the various tower control positions.

In addition, this model can also be used for depth perception

DSP ACHIEVES MILESTONE



The Departure Spacing Program (DSP) recently accomplished a major milestone in its proof-of-concept prototype development.

Recently, a ribbon-cutting ceremony was held to mark the successful implementation of the DSP Integration and Operations (DIO) Laboratory at the Tech Center.

After months of planning and preparation, the Lab officially became ready for use on August 1.

The sponsor of the program is the Traffic Flow and Enterprise Management Integrated Product Team (AUA-700). IPT Leader Dan Gutwein acknowledged the hard work of all members of the DSP Team in achieving this success. Linda LaBelle, the DSP Product Lead, worked closely with staff at the Tech Center (ACB-720) as well as the prime contractor, Computer Sciences Corporation (CSC), in making this laboratory a

management specialists and controllers with tools to allow them to maximize the utilization of available airspace capacity and reduce departure delays.

reality.

The DSP is a traffic management prototype currently in operation in the New York and Philadelphia metropolitan areas. It is designed to provide traffic

process between the towers, TRACON, and the traffic management unit in the ARTCC.

The DIO Laboratory is envisioned as a facility where the FAA will be able to conduct research and modeling of multi-ARTCC departure flow management concepts in a simulated environment. Additionally, this facility may serve as a means to support DSP user training activities and evaluate future enhancements for the system.

Furthermore, the DIO Laboratory will allow fully functional simulation of DSP operations using equipment suites to

DSP coordinates the release of departures from multiple airports to produce a level of demand that can be efficiently managed as departure traffic converges on common departure fixes.

DSP coordinates the release of departures from multiple airports to produce a level of demand that can be efficiently managed as departure traffic converges on common departure fixes. Operational testing is ongoing to further refine these capabilities. In addition, DSP has automated the operation of the New York Departure Complex, resulting in less time and workload needed to coordinate departure route changes, especially during severe weather situations. DSP has also automated the flow of departure information and the release coordination

simulate New York, Boston, Washington, and Air Traffic Control System Command Center (ATCSCC) facility operations. The Laboratory constitutes a major investment for the FAA not only in terms of cost of the equipment, but also time and effort invested in planning and installation.



A SAFETY MINUTE

FROM THE SAFETY OFFICE, ENVIRONMENTAL GROUP (ACX-42)

A Vested Interest

The summer months can be extremely stressful on employees who work outdoors. One of the major concerns is Heat Stress.

Employees performing frequent or heavy lifting or exposed to the sun for long periods of time are at risk for Heat Stress. With its effects, the Safety Office (ACX-42) is trying a new approach to assist employees in staying cool.

The Office has purchased a cooling vest. It is designed to cool the body by using ice crystals that fit into inside pockets located in the front and back of the vest. This cooling method has been successful in reducing the effects of heat on workers in the construction industry.

Still in the experimental stage, the Safety Office is having various Center employees who work outside wear the vest while they

work. If it is found to be beneficial to the users, then the Office will purchase more cooling vests for distribution and use among Center personnel

The Safety Office has a 'vested' interest in keeping you cool this summer! If you have an interest in keeping cool while you work this summer give the Office a call at x6360- we may be able to help!

Have a Safe Summer!

AAR-500 CHANGES



Effective August 5, **Paul Polski** became the Chief of Staff for Randy Null, TSA's Chief Technology Officer. In his new position, Paul will be responsible for managing the relocation of the CTO's to new headquarters on Pennsylvania Avenue and the transition of the organization to the proposed Department of Homeland Security. Chuck Burke, who was Mr. Null's Chief of Staff, will now be his Deputy. Also, effective August 5, **Susan Hollowell** and **Ken Hacker** became co-directors of the Transportation Security

RE&D Division, where they will divide administrative and technical functions.

Susan Hollowell earned a Ph.D. in analytical chemistry from the University of Delaware in 1989. She has also completed the Harvard JFK School of Government curriculum for Senior Executive Fellows. Prior to her new assignment, she served as manager of the Explosives and Weapons Detection R&D Branch of the Aviation Security R&D Division of the Office of Aviation Research. Susan has authored or coauthored over 60 scientific papers and is the recipient of multiple awards for research and technology development. Prior to working for the FAA, she worked for 18 years for the Department of Defense.

Ken Hacker graduated from the USAF Academy in 1966 with a B.S. in engineering. He spent the

majority of his military career as an Air Force pilot accumulating over 4,900 hours of flying time, including over 1200 hours in support of Southeast Asia operations. He served as an instructor and an evaluator/check pilot, flying Squadron Commander, and Wing, Deputy Commander for Operations. Ken also spent tours of duty as a nuclear weapons planner and a technology development planner as well as serving as Chief of the Strategic Operations Division at Headquarters USA. He received an M.A. in Industrial Psychology from Louisiana Tech University in 1976 and graduated from the Air War College in 1985. He retired from the Air Force in 1990 with the rank of Colonel. Ken came to work for the Aviation Security Research and Development Service in 1991 and served as manager of the Aircraft Hardening Program until 2001.

THE ROAD TO ISO 9001 REGISTRATION

(Thanks to AAR-500's **John Tye** and **JIL's Stephen Rooney** and **John Mruz** for writing this article.)

The Transportation Security Research, Engineering and Development Division (known as AAR-500), an organization within the new Transportation Security Administration (TSA), recently achieved ISO 9001:2000 registration of its quality management system (QMS). This registration certificate is the first issued to an organization within the TSA and only the sixth to a U.S. government organization.

The Road to Registration

Planning for the ISO 9001:2000 registration effort began in spring 2001, well before the Sept. 11 tragedy. John Tye, quality manager in the division's business office, says the lab decided to seek registration "to gain international recognition; we wanted to have a good quality standard to benchmark our processes to and, at the same time, enforce that quality standard on the manufacturers of EDS equipment."

After obtaining management commitment, AAR-500 formed an internal ISO team and chose JIL Information Systems Inc., of Egg Harbor Township, NJ, and Vienna, VA, to provide contractor support.

"We wanted to have a good quality standard to benchmark our processes to and, at the same time, enforce that quality standard on the manufacturers of EDS equipment."

ASQ provided on-site ISO 9001:2000 internal auditor training for the team. AAR-500 used MS Project 2000 software to develop a project task, time line, and milestone plan, and update them regularly to track progress. The team used flowcharting software to graphically define the core processes involved in the certification of EDSs and the corrective and preventive action procedures required by ISO 9001.

Challenges

One key challenge to certification was the fact that AAR-500 was not previously registered to ISO 9000:1994. Unlike the 1994 version, which is prescriptive and requires a large quantity of documentation, the 2000 revision requires much less documentation. This allows for a more tailored approach to creating and documenting a QMS, but does not necessarily make the application of the standard less complex.

AAR-500 claimed exclusion from element 7.3, the standard's design element, because the nature of the EDS certification testing process does not allow any design configuration changes during certi-

fication testing.

AAR-500 had difficulty in applying element seven on product realization and element eight on measurement, analysis, and improvement. The difficulty came from the fact that the actual "product" from the certification testing process is data. Data tend to be intangible, and it was difficult to determine how to apply clauses such as 7.1 on planning of product realization and 8.3 on control of nonconforming product. AAR-500 chose to define nonconforming product as any evaluation within the EDS certification process where the vendor, equipment, data, or system does not fulfill the requirements of certification.

Selecting a Registrar

AAR-500 selected QMI of Mississauga, Ontario, Canada, and Springfield, PA, as the registrar based on its credentials, experience, location and familiarity with the Tech Center.

QMI conducted an on-site document review on January 18. The reviewers issued 14 findings after the document review. The lab needed to revise its quality manual to clarify how AAR-500 satisfied ISO 9000:2001 requirements in elements 4 through 8 (covering QMS general and documentation requirements, manage-

ment responsibility, resource management, product realization, and measurement, analysis and improvement.

The next step was a QMS pre-assessment on February 19. The preassessment resulted in 10 findings, mainly documented procedure clarification requirements. These were satisfied using the implemented corrective action process and approved by the QMI auditor.

The registration audit was on March 19 and 20. One nonconformance--for incomplete training records--was noted during the audit. Corrective action cleared the nonconformance in a timely manner, leading to the issuance of the certificate of registration on April 17.

Lessons Learned

Clearly defining the scope of the registration is of paramount importance. At the onset of the project, AAR-500 entertained the prospect of registering numerous, complex processes performed in the lab. This quickly proved to be an unmanageable endeavor. John Tye said, "There was no way we were going to be able to wrap our arms around all the processes occurring here and capture and document them without probably shutting down the labs and co-opting all the employees into the ISO 9001 team. Early on the team

decided to focus its energies on certification testing of EDSs, the process we're most noted for. Management commitment for implementation through communication at regular intervals throughout the process is mandatory. Not only does this positively reinforce top management support, but it makes clear the support is ongoing."

Another lesson learned was that all employees involved or affected by ISO 9001 require training. Management chose 14 employees to receive internal auditor training and overview provided by ASQ on site. These 14 formed the implementation team.

All employees involved in or supporting the EDS certification testing process received in-house training, and ISO 9001 training is now a regular part of new employee orientation.



Benefits and Future Plans

Several benefits came with AAR-500's formal ISO 9001:2000 registration, most notably the ability to demonstrate the lab's commitment to providing the most effective and efficient transportation security systems possible to its customers. As the division expands to incorporate other modes of transportation, including rail and sea, the scope of the ISO 9001:2000 registration will expand to include these areas as well. The immediate future will focus on incorporating the trace detection testing process into the scope of the QMS.

Continual measurable improvement of the QMS, an ISO 9001:2000 requirement, will lead to even greater customer satisfaction and efficiency. Above all, registration to ISO 9001:2000 is a declaration to the world of AAR-500's ongoing commitment to quality.



ISO Team Members: From left - back row: Sheldun Brunk; Kim Lee; Bill Petracci; Roberta Moncrief; Therese Brennan; John Mru; Johy Tye; and Ron Polillo. From left - front row: Theresa McGhee; Joe Kunkle; Lok Koo; Patty Reichenbach; Diane Wilson; Linda Tropicano; Steve Rooney; and Alice Santiago.

A VIEW FROM THE TOP (CONT.)



studies and evaluation of various console heights and angles. The cab simulator provides an optimum operational environment for the identification and resolution of transition issues related to the implementation and integration of air traffic control tower systems and equipment. This equipment is a sound test bed to study airport capacity concerns such as runway acceptance rates and alternative approach-departure sequencing. Its capabilities include demonstrating airport procedures developed to assist in solving runway incursion issues.

The cab simulator suite has six projection systems, each containing a 120" diagonal rear projection screen mounted around the periphery of the tower cab replacing what would normally be windows in an actual control tower.

The Airway Facilities Tower Integration Laboratory has provided simulation support models to 26 airport expansion projects over the last 4 years. The expansion models are:

Bradley, CT
Cleveland, OH
Port Columbus, OH
Champaign, IL
E. St. Louis, IL

Dayton, OH
Deer Valley, AZ
Fort Wayne, IN
Dulles International, VA
Indianapolis, IN
LaGuardia, NY
Manchester, NH
Morristown, NJ
Newark, NJ
Oakland, CA
Oshkosh, WI
Phoenix, AZ
Reno, NV
Richmond, VA
Santa Ana, CA
Stewart, NY
Tulsa (Riverside), OK
Williamsburg, VA
Wilmington, DE

A vivid example of one of these expansion models is the Dayton International Airport, Ohio. The evaluation team for the Dayton airport consisted of 13 members representing all participating airport organizations. The evaluation of the AFTIL-constructed presentation which shows five-phases of planned airport expansion included transporting the team to three-proposed air traffic control tower sites to observe and evaluate their simulated traffic operations in the new Dayton surroundings.

As a preventative measure for future traffic operations, simultaneous air traffic approaches to the main and parallel runways were performed. As a result, the view from the third location, at an eye-level of 233 feet, provided an unobstructed view of the airborne traffic patterns, but the look-down view from this location obstructed a major taxiway leading into the terminal concourse area.

While all other factors met the evaluators' approval, within moments, adjustments were made to eliminate this obstruction. The site was moved 178 feet to a new location, which increased the eye-level to 255 feet. The evaluators were pleased with this solution and the quick response of AFTIL. Their ability to move the controller eye point with such precision in photorealistic environment enabled the evaluators to forge ahead with confidence to complete the optimum control tower site location for the airport in a two day period.

As a tribute to AFTIL and their level of confidence, the team drafted and signed a Notice of Agreement expressing their unanimous approval of the Dayton tower location decision. The FAA Program Manager's Exit Questionnaire offered the best comments..."We are saving millions by having access to the AFTIL...Thank You all for an extremely productive effort."

Another example of the expansion model is the flight simulation in Tempe, Arizona. The AFTIL was asked to assist in solving an air safety issue regarding

the construction of a prospective new football stadium for the NFL Arizona Cardinals. The Tempe Sports and Exposition Authority planned the location of the stadium precisely 1.9 miles off the end of runway 08 at Phoenix International Airport.

The proximity of the stadium to the airport left the FAA concerned about the possible flight safety hazard posed to single-engine out procedures for arrival and departure flights to the runway. Although the Tempe Sports and Exposition Authority contended there wasn't a hazard and preceded with plans to build, the AFTIL developed flight profiles which showed otherwise.

AFTIL provided a simulation of aircraft departing runway 08 on the single-engine out procedure flight path. They generated and depicted an Obstacle Accountability Area (OAA) which illustrated the airspace required both vertically and laterally, for aircraft flying the procedure.

This video-recorded simulation, showed the aircraft flying the left edge of the OAA which placed them directly over the right third of the stadium. All factors considered, the aircraft, climbing the expected 2.3 gradient, would pass over an altitude of 309 feet, a mere 83 feet above the stadium roof. Both the video's plane view and pilot's eye view conveyed the visual realization of the closeness of the proposed stadium to the emergency flight path.

As a means of demonstrating how low the large commercial airliners would be flying above the stadium filled with fans, the video eye point was moved to the pro-

posed football field at the 50 yard line. As a result this video recording was aired on the Phoenix TV News channels over one weekend, which created such concern within the viewing public, the Tempe Sports and Exposition Authority announced they would delay their efforts to build, pending the location of a more favorable stadium site.

The People and What They Do

The AFTIL is supervised by **William Vaughan** (ACB 340) and the Laboratory Manager is **John Wilks** (ACB 840). The initial 3D model using AutoCAD 200 was prepared by **Dan Delaney** (CSSI, Inc.). All surfaces and structures are prepared in accordance with the Airport Layout Plan (ALP). Dan also employs Autodesk Land Development Desktop to create terrain models by the use of contour data on the ALP or by importing RAW elevation data in the form of ASCII text files.

The AutoCAD 3D model is prepared with a layering scheme that easily translates into Multigen Creator's database hierarchy. The completed AutoCAD file is exported to Multigen Creator for texturing and building height adjustment. **Lester Hancock, Ben Gottlieb, and Dan Leary**, are Multigen 3D modelers. They first apply a 3D to 2D conversion to the model, and export it to the ADACEL simulator's graphical editor (GRED) before continuing their refinement of the model. This GRED file is used to apply ground routes and air routes for aircraft to follow during simulation. After the routes have been established,

the Multigen modelers retrieve the original file and apply textures and extrude buildings to their proper height. Photographs of buildings that were taken during site visits are used to apply texture.

Panoramic photographs are also applied to display distant landmarks like mountains or city skylines. Tower cabs are added to the model at predetermined locations. Upon completion of the model, the Multigen modelers have designed an accurate and realistic reproduction of the airport with prospective tower sites in place.

At this point, the Multigen operator takes the completed 3D model and loads it into AFTIL's Quantum 3D image generator which consists of six image generating modules connected to six projectors. The projectors display the airport model on six 6' x 8' screens and allow real-time movement throughout the scene.

While work is being done on the model, other operations are being conducted to complete the simulation. **John Aschenbach**, the Lead Simulation Engineer coordinates the various phases of operation, while overseeing the preparation of photographs being applied to the model. John also prepares and applies aircraft liveries as they are needed. Here, photographs are combined and their dimensions, tonal quality, and hue, are modified to work effectively in the model by **Joe Sheairs** and John Aschenbach. This captures the realism of the scene.

Joan Carpenter works with the ADACEL simulator's Graphical Editor. Joan, creates all of the aircraft parking and ground routes. The ground routes are

CHINA VISIT



The Tech Center recently played host to eight, top-management officials from the General Administration of Civil Aviation of China (CAAC), who were making a whirlwind tour of five aviation facilities in the United States. The CAAC is a ministerial unit in charge of civil aviation affairs in China. The group began their series of informational tours in Los Angeles and proceeded to Seattle, Washington, D.C., Atlantic City, and New York City before returning to Beijing, China.

During their visit, the Chinese delegates were hoping to gain a better insight into U.S. airport management, operations, and the

relationship between government and airports. The Chinese government realizes their development of civil aviation in China is critical to their country's continuing overall economic progress.

Their recent tour of the research and development facilities at the Center provided the Chinese delegates an opportunity to exchange ideas and gather information from our subject matter experts that might assist them in their on-going airport reformation program.

China has been making dramatic changes in its aviation system in an effort to prepare for its imminent entry into the World Trade Organization (WTO). Despite the keen competition, operational difficulties, and an 80% increase in fuel costs since 1999, the Chinese aviation industry experienced a rapid growth in

their passenger and cargo services in the year 2000 that resulted in significant profits.

In February 2002, the CAAC acted on their plans to merge the nine major airlines under their management into three aviation groups. Another part of their plan was to merge the 24 aviation administrations overseeing their 129 airports into seven regional aviation administrations. Their plan was to combine assets, aircraft and management to be more in line with the WTO commitments and to reinforce their competitive edge.

The Chinese government realizes the aviation sector offers excellent opportunities for growth through cooperation with suitable foreign companies and organizations. They also are eager to search out new ideas and technology from experts like we have available at the Center in preparation for the 2008 Winter Olympics scheduled to be held in Beijing.

MESSAGE (CONT.)

catapulted us into the fast lane as we strive to design and develop new equipment and aviation resources that will enhance the safety level of the traveling public.

Millions of Americans are looking to us as the aviation experts who can create a safer and more efficient aviation system that will be less obtrusive upon the American public but more efficient and safer once they are airborne.

Like a Phoenix from the ashes of the World Trade Center, the Pentagon, and a field in Pennsylvania, the aviation network cannot and will not be deterred from its goal to be the most efficient and safest transportation system in the world.

The briefings and reports I receive from employees of the Tech Center reaffirm in my mind how we all are giving our best

efforts in trying to "make a difference" in the world of aviation. As President George W. Bush recently stated, "Public service is not just a job. It is an act of citizenship." We all have a responsibility to ourselves, to our family and friends, and to our country to continue to strive to maintain a nation that is safe, free in mind and spirit, and worthy of being emulated by all other nations.

FAA/NASA PRESENT DESIGN AWARDS



FAA Great Lakes Regional Administrator, Cecelia Hunziker, making the

The FAA and NASA recently honored students from seven universities today as winners of the 2002 University Student Competition, an annual competition created to foster student interest in revolutionizing general aviation. Winning projects were recognized at an awards ceremony at the annual Experimental Aircraft Associations' AirVenture fly-in at Oshkosh, WI.

Cecelia Hunziker, Great Lakes Regional Administrator joined senior representatives from the NASA Langley in presenting the awards on behalf of the two Agencies.

The nationwide competition is part of a government effort to stimulate technology breakthroughs and their application to general aviation. General aviation aircraft are generally defined as single or twin-engine, single-pilot, fixed-wing aircraft. This year, students were challenged to pursue innovative systems and technology concepts in support of NASA's Small Aircraft Transportation

Systems (SATS) research program. In the Systems Innovation category . . .

- Kansas State's Department of Psychology, Manhattan, KS, took first place for their advanced cockpit system. The team's design assists non-instrument rated pilots to land in poor weather conditions by simplifying complex flight tasks.
- Georgia Tech, Atlanta, GA, tied for second place with George Mason University, Fairfax, VA. The Tech team produced software that simulates a variety of travel situations, allowing travelers to choose options that best suit their needs. GMU's team analyzed the potential for fractional ownership of small jets, proving the concept as a practical alternative to current air travel.

- An honorable mention went to a second team from George Mason for their independent and ground-based air traffic management system.

In the Technology Innovation category . . .

- University of Virginia's Engineering Department, Charlottesville, VA, took first place for "Alaris," an aircraft concept that produced outstanding performance by combining a lightweight wing and body with a powerful turbofan engine.

- A team from Virginia Tech, Blacksburg, VA, and Loughborough University, Leicestershire, United Kingdom, took second place. Their joint effort resulted in "Ikelos," a uniquely designed aircraft that allows very short takeoffs and landings.
- Third place went to Douglas Burch, an electrical engineering student from Ohio University, Athens, OH, for his enhanced heads-up display for future aircraft.
- Honorable mention went to the University of Oklahoma and two teams from Ohio University for their innovative vehicle concepts.

All winners received a cash award, a commemorative trophy for their institutions, and certificates of appreciation. Two students from the winning Kansas State team earned internships at NASA Langley.

The 2003 competition will be broadened to include a separate high school division and include categories beyond general aviation. The all-new Revolutionary Vehicle Concepts and Systems Competition will be sponsored by the NASA Office of Aerospace Technology, and NASA Langley and Glenn Research Centers. NASA Langley's Vehicle Systems Technology Office will lead the effort. Details are available at <http://avst.larc.nasa.gov>.

MORE FROM THE AWARDS CEREMONY



AFTIL (CONT.)

applied so that any number of taxi routes can be executed from the pseudo pilot position.

Bernie Garbowski and **Roger Bawgus** (JSA Inc.) are experienced Air Traffic Controllers who serve as the local and ground controllers during simulation. During preparation of the simulation, Bernie and Roger are project leads carrying out ongoing correspondence with the customer and addressing specific issues pertaining to the particular airport. Bernie and Roger also apply air routes for the simulation.

William J. Hughes
Technical Center

Intercom

Editor:

Terry Kraus

Contributors:

Holly Baker
Cathy Bigelow
Therese Brennan
Ginger Cairnes
Louis Campolo
Peter Castellano
Stan Ciurczak
Fran Chesley
Bill Dawson
Dan Delaney
Mary Lou Dordan
Carleen Genna-Stoltzfus
Annette Harrell
David Hess
Paul Lawrence
Pat Lui
Bob Marks
Pete McHugh
Ernie Pappas
Ken Stroud
Laurie Zaleski

For any questions,
 comments, or ideas,
 please contact
Intercom's editor at
 (202) 267-3854

The WJHTC *Intercom* is
 available in color on-line at:
<http://www.tc.faa.gov/intercom/intercom.htm>