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Successful Drop Test Conducted

By Ginger Cairnes



The Technical Center's ATR42 is hoisted up before being dropped from an elevation of 14 feet.

Five...four...three...two...one, CRASH! In the blink of an eye, nearly a year of effort came crashing to the concrete, liquid spilling from the "fuel tanks" and wings breaking away from the fuselage.

Normal business for the FAA is to keep aircraft in the sky. However, the regulatory agency sometimes must "drop" an aircraft to its destruction in order to learn how to make a crash survivable. This is the objective of the crashworthiness team at the William J. Hughes Technical Center, whose business it is to "crash aircraft" for research.

On July 30, a full-scale drop test of an ATR42-300, 32-passenger aircraft with an 81-foot wingspan and weight exceeding 35,000 pounds was conducted. This was the largest aircraft ever "dropped" at the Technical Center. The test will help

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Associate Administrator Holds All Hands Meeting

By Stan Ciurczak

Technical Center Director, **Dr. Anne Harlan** (ACT-1), took center stage in the auditorium, on August 13, to introduce **Charles Keegan**, associate administrator for Research and Acquisition (ARA-1). She introduced Keegan as, "a man who needs no introduction to Center employees." Keegan went on to speak about a number of topics of interest to Center

employees, beginning with the recently filled position of Chief Operating Officer (COO) for the Federal Aviation Administration.

On August 1, new COO **Dr. Russell Chew** hit the ground running at FAA headquarters by visiting the employees in ARA, Air Traffic Services (ATS) and other organizations that will com-

prise the newly established Air Traffic Organization (ATO). In fact, Keegan said Chew spent the month of July making the rounds at the



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Drop Test

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determine how the fuselage of a large, high-wing regional transport aircraft would respond if involved in a severe but survivable crash. The research supports studies leading to the incorporation of dynamically tested seats in commuter aircraft and the developing of new safety standards.

Safety researchers dropped the aircraft from the vertical drop-test tower at an elevation of 14 feet. "Dropping the plane from any higher up would have been pointless because the crash would not have been survivable, negating the need for studying structural damage," Frings said. As part of the test, pilot and co-pilot seats, and 23 crash dummies were seated in the aircraft; seven of which were specially instrumented to measure human reaction to impact forces.

More than 133 data channels were installed on the aircraft and 19 high-speed and video cameras were placed both inside and out to gather test data. One of the areas of data

collection is the impact response assessed on the airframe structure, overhead bins, auxiliary fuel tanks, and potential for occupant injury.

Additionally, a computer model was constructed to help predict damage to the aircraft, crash gravity loads sustained by the structure, impact of gravity loads on the seats, and the forces experienced by the "seated occupants," which were specially designed crash dummies. Results of the "crash" will be used to refine and validate the model. It is hoped that the model can be used in the future to simulate crashes utilizing a wider range of conditions and providing a more cost and time effective vehicle with which engineers can better predict results.

Speaking to CNN, Gary Frings, manager of the Crashworthiness Program, said, "The FAA will take six months to gather and analyze the data, and six months after that, the agency will issue a report on the tests."

After watching the test, Frings stated that although the test was "very severe" it "will yield good data." 🕒



Above: The Point of impact. Below: The severity of the "drop" can be seen as indicated in the position of the wings and the "liquid spill" on the ground.



Keegan Visit

Continued from Page 1

White House and Congress before relocating from Texas to the Washington, DC area.

As a former American Airlines executive, Chew brings the perspective of an experienced businessman to the position of COO. That means he is focused on "bread-and-butter" issues that are of interest to commercial operators and the agency. While concerned with the value that the FAA gets for its investments, Keegan cautioned that Chew does not believe in analysis paralysis. He believes you study an issue for about a week, make a decision and then live with it. He wants to know how many months — not how many years

or decades — it will take to get a return on investments. Keegan stated that, just as he put a stop to the pFAST program, he expects Chew will prioritize ATO project work, cancel low-level projects and reassign employees who become freed up when their projects are zeroed out.

Keegan also spoke about the new Joint Program Office, which is a joint effort of NASA and the departments of Commerce, Defense, Homeland Security and Transportation. This team is working on a national aviation plan for 2025, focusing on ideas that the U.S. can use to begin reestablishing the industrial base that our nation has lost over time.

According to Keegan, if funding is made available, the plan is due to be completed by October 2004, with the team's recommendations becoming actionable within one year. The FAA part of this initiative is under the leadership of John Kern and Joan Bauerlein.

The all hands meeting concluded with a request by ARA-1, that all employees take the time to familiarize themselves with the new FAA Strategic Plan. This plan was developed at the request of Administrator Marion Blakey, and is available on the FAA home page on the web. 🕒

Organizational Profile: Customer & Program Management Staff, ACB-3

By Rick Page

This is the second in a series of stories about the technical side of the William J. Hughes Technical Center.

The William J. Hughes Technical Center was realigned in order to provide products and services more effectively to our customers. The **Customer and Program Management Staff (ACB-3)**, managed by Paula Nouragas, is an integral part of the realignment by providing a single point of contact for both internal and external customers.

ACB-3 advises John Wiley, Managing Director for Innovations and Solutions (ACB-1), on technical program planning, and provides program management and support to other FAA and federal government activities. This staff is divided into three groups: a Program Planning and Review Staff, a Business Development Director and Domain Directors.

Program Planning and Review

With support from the Information

Technology Division (ACX-20), the Program Planning and Review Staff is responsible for the design, development and implementation of a management information system that will provide integrated information for program control activities such as project planning, project organization, schedule, cost and performance tracking and monitoring. This team synthesizes the information and provides recommendations to support management decision-making activities. It also provides advice on plans and progress of process improvement activities, and manages the **Quality Management Office** in support of ISO 9001 certification efforts.

Business Development

The **Business Development** Director coordinates with customers, who are external to the FAA, to identify new areas of cooperative work and to establish appropriate partnerships and agreements. Once new work is identified, the Business Development Director works with the appropriate

domain director and division manager to get the work accomplished.

Domain Directors

The domain directors are aligned with FAA domains (e.g., en-route, terminal, weather and flight service, etc.). They provide a single FAA point of contact in order to address customer needs such as obtaining task requirements, coordinating and approving program directives and formal agreements, and coordinating and monitoring project status with key personnel. They also obtain customer feedback on a regular basis to identify how to improve services as needed.

Along with the other Technical Center organizations, ACB-3 is working very hard to meet the needs of internal and external customers, and the needs of the global aviation system, both now and in the future. 🚀

Richard Stockton College MBA Program

Richard Stockton College has begun a MBA Program.

Tuition (current rate, as the 2003/2004 rate is not yet available):

\$337 per credit In-State
\$455 per credit Out of State

Admissions Criteria are:

Completed application including a

personal essay; Baccalaureate degree from a regionally accredited institution; Two letters of professional reference; Minimum GMAT score of 400 (as of 2003 – this will increase 10 points per year for the first five years after the MBA is implemented); In addition to the GMAT score, an admissions minimum score of $200 \times \text{GPA} + \text{GMAT} = 950$ or greater (this also will

increase annually after the MBA is implemented); Satisfaction of the prerequisite requirements of coursework completed with grades of B or above, and/or by documentation of related work experience; Evidence of the ability to use a computer for word processing, spreadsheet analysis, and database file creation and manipulation.

SE & ISS: Meeting Real World Challenges

By Basilyn Bunting

The Federal Aviation Administration (FAA) William J. Hughes Technical Center is pleased to host the FAA System Engineering (SE) and Information Systems Security (ISS) Annual Workshop to address recent developments in SE/ISS. The workshop will be held December 3-5, 2003 at the Boardwalk Holiday Inn in Atlantic City, NJ.

Key objectives of the workshop include educating FAA employees and contractors about SE policies, procedures, and early successes. Discussions will be held on the role of the Technical Center in SE/ISS lifecycles, and will illustrate the interrelationships between ACT, ASD, AUA, AND, ASU and other FAA lines of business.

Speakers for the three-day event include: **Dr. Anne Harlan**, ACT-1, who will open the Workshop; and **Charles Keegan**, ARA-1, who will

discuss the role of system engineering in research and acquisitions. Also, **John Scardina**, ASD-1, will discuss how to integrate SE and ISS into our development activities.

Some topics to be discussed include: Evolution of the System Engineering Council (SEC), System Engineering Manual (SEM), System Engineering Management Plan (SEMP), International Council Of System Engineering (INCOSE) perspective, and System Engineering Certification.

Several case studies will be presented such as: Tailoring and Implementing the FAA SEM/SEMP in an organization; Functional Analysis of Weather; and System Engineering and NEXCOM. The agenda will also will feature presentations from FAA chief system engineers who will report on their progress to date in using SE principles in FAA acquisition programs.

Other highlights include an overview of ISS at the Technical Center; the National Strategy to Secure Cyberspace (featuring a speaker from the Department of Homeland Security); and integrated product team leaders who will present their perspectives on ISS. Also to be presented are AUA management perspective on ISS, ISS Protection Levels, Securing a Modernized NAS, and NAS Security Requirements. Panel discussions featuring subject matter experts will focus on the Challenges of Implementing System Engineering in FAA and ISS Implementation in the NAS Infrastructure.

To register for the workshop and check out the three-day schedule, please visit our website at <http://se-iss.tc.faa.gov>. Hotel information is also provided. We have a full agenda and hope to see you there. ☺





IN MEMORIAM

**Honoring All
Americans
Who Gave
Their Lives
On the
Day
We Will
Never
Forget**

SEPTEMBER 11, 2001

Employee Profile: Joe Jones

By Majorie Smith

You might think that someone who has worked most of his or her life at an aviation facility would have a deep interest in aviation. As you walk around the FAA William J. Hughes Technical Center, you can see pictures and models of various aircraft in employees' cubicles.

Joseph Jones has a keen interest in transportation, but it is trains not planes that really fascinate him. He is a quality control specialist in the Facility Engineering and Operations Branch, where he ensures that the contractor's (J. A. Jones) electrical team is keeping the Center's electrical systems working smoothly.

His fascination began as a boy. His father set the stage for him right from the beginning. "My father gave me my first train set when I was a year old," said Jones. "It is a set that I still have today."

When he was 12, his father gave him a gift that would forever make him a Flyer fan (toy trains, not hockey). He received his first set of American Flyer trains.

Jones feels that his fascination with trains is easily understandable, especially for someone who grew up in his era. At the time, trains were a major mode of transportation. "Everyone worked on them," he said. "My uncle worked for the Reading Railroad. He used to take me to Wayne Junction in Philadelphia. He would put me on the seat of the locomotive and I would operate the train."

However, for a while it looked like the boy's fascination would not carry over into manhood. After graduating from Atlantic City High School in 1954, he enlisted in the U.S. Navy, where he

trained to be an electrician. Always interested in travel, he pursued his interest by trying to build a sailboat that would sail the high seas. Later a stint in the Navy gave Jones an opportunity to serve on four different kinds of ships. He had the opportunity to cruise to the Mediterranean, the Caribbean and the North Atlantic.

"I must admit that the hobby was dormant for a while. While I was in the Navy," Jones said, "I was fascinated with the water." This is how he developed another of his hobbies – building model ships.

After getting out of the Navy, Jones became a FAA employee in 1967. One might think that his hobby might turn to aviation, but instead, influenced by a group of friends, who were train enthusiasts, he renewed his passion for trains. Jones and his friends were all members of the Train Collectors Association, which is based in Strasburg, PA. He joined in 1975 and has never looked back.

His love of trains has grown so that he, along with his wife of 41 years, Florence, opened the Flyertown Toy Train Museum and Operating Model Railroad in Clermont, NJ.

Mr. and Mrs. Jones have two daughters, Christine and Debbie, and a granddaughter, Madeline, who is 10. (Debbie, like her father, also works at the Technical Center. She is a Wackenhut Security Guard.) His daughters, while very proud of their



Jones and his wife, Florence, at their train store in Clermont, NJ

father, are delighted with the museum, but they are not train enthusiasts. However, Madeline shares her grandfather's love for the locomotive. She particularly loves to go to Flyertown train museum and enthusiastically helps her grandfather convey his excitement to visitors.

Everything seems to be a little extra special to him now. He was blessed with a second chance at life after undergoing bypass heart surgery. He said he felt better after the surgery than he had for years.

Jones has many interests, including spending time with his family, world travel, walking the beach and enjoying Broadway shows. His main interest, however, is his trains. He often treks to Strasburg, the railroad capital of the east, to enjoy the many trains and railroad museums there.

On weekends he can be found at Flyertown. There he enjoys showing his vast collection of model trains to the young and the young at heart, and cheerfully listens to his granddaughter greeting train enthusiasts. 🚂

Technical Center Women Pilots

By Cathy Jaggard

This article is the first in a two-part series featuring women who work at the William J. Hughes Technical Center and are also pilots.

Dr. Anne Harlan, director of the FAA's William J. Hughes Technical Center, was inspired to become a pilot during her childhood. She lived close to an air force base and loved watching the planes. As a teenager, she bought a ticket from Dallas to Houston on Branniff Airlines to see what flying was like. She was hooked and fell in love with flying!

It was not until she began her career at the FAA, where several of her friends were already licensed pilots that she began to pursue her dream. Taking full advantage of the ground school offered to employees, she worked at making her childhood dream a reality.

She successfully completed the requirements and earned her pilot's license, which she has held for more than a decade. Harlan currently possesses commercial, instrument and multi-engine certifications.

Harlan's journey to the air did have some turbulence. On one of her first solo flights, still a student pilot, she was heading from Hanscom Field in Massachusetts to Concord, NH, a small, general aviation airport. Harlan thought she had prepared well, but saw the airport to her right instead of straight ahead. A little panicked, she assumed she had done something wrong, and headed for the airport she saw. When a commercial jet approached, she quickly realized that she was heading to the wrong airport. Just then, the air traffic controller said, "unidentified pilot at Manchester

Airport, please identify yourself." Harlan let the controller know that she was a student pilot and had mistakenly entered controlled airspace. The controller was very understanding and provided her the assistance she needed. She thanked the controller and successfully continued her flight. More than a little embarrassed, she could imagine what her friends at flight standards would say if they found out, particularly since she worked for the FAA.

The flying bug bit **Rosanne Weiss** almost accidentally. As part of her job, she flew on test flights to collect and analyze data, but she never really had considered becoming a pilot.

When there was a call for employees who would be interested in learning to fly for a special project with Embry-Riddle Aeronautical University, Weiss' interest was peaked. The free program was offered to federal employees who worked at the Center. For Weiss, this was a "no brainer." "They were offering the classes. They were free and you were permitted to take the class during work hours," she said. "It was one of those offers you can't refuse."

Embry Riddle had two programs — a three-month accelerated program and the more standard six-month program. Weiss was selected for the accelerated program, but she freely admits that her aptitude did not match her enthusiasm, and she withdrew from the program. Despite needing to back out of the program, her enthusiasm for flying did not wane. She was now more determined than ever to achieve her goal. Flying was now in her blood. At her own expense, she contacted the FAA Flying Club and

earned her license in 1981. However, as was the case with Harlan, Weiss's road to the air was not adventure free. While flying on one of her supervised solos (the instructor is on the ground watching), she was down wind to her runway when the controller instructed her to extend (fly further) down wind. So she headed toward Hammonton, crossed the Greater Egg Harbor River, and kept going. She extended so far that the instructor began to panic. What should have taken about 10 minutes had taken much longer.

Finally, Weiss, who was becoming a little concerned (it was only her second supervised solo), called the controller and asked if she could come back in for a landing. The controller granted her permission to do so. Around the same time that Weiss contacted the tower, the panicked instructor called to try and locate his student. The controller informed the instructor of the situation, who asked that Weiss be reminded to switch fuel tanks. Weiss, now in full control and much less panicked, had already switched tanks and was coming in for a landing. When she got back on the ground, her instructor, who was pale and shaken, said, "I couldn't figure out what happened to you."

On one of her first unsupervised solos, Weiss was again instructed to go down wind. This time she found herself flying over the ocean. She became very apprehensive because she was sure that, as a student pilot, she did not have the experience to fly over large bodies of water. When she contacted the controller, the response she received was, "Oh, we forgot all about you." Maybe Weiss was born to fly and fly and fly . . . 

NHCFAE Recognizes Colon and Young

Several employees of the FAA William J. Hughes Technical Center were recognized at the recent national conference of the National Hispanic Coalition of Federal Aviation Employees, which was held in San Antonio, TX.

Magda Colon Member of the Year

Mother Teresa once said, "If you are not living on the edge then you are taking up too much space." **Magda Colon** not only lives on the edge, she defines and redefines the meaning of equality for women and minorities in the workplace. She is at the forefront of creating a work environment at the Technical Center that mirrors the American cultural landscape. She works toward the day that the Technical Center's work environment will become an "employer of choice."

Colon, who was also awarded with a service award, has led a courageous and difficult fight against inequities within the job selection process. She



facilitated the development of a coalition consisting of all special interest groups (National Hispanic Coalition of Federal Aviation Employees; National Black Coalition of Federal Aviation Employees; Federal Women's Program; Gay, Lesbian, or Bisexual Employees, etc.) at the Center. Her leadership role in the coalition resulted in an increased number of minorities and women being promoted to the ranks of management. Through the coalition, Colon has changed the role of special interest groups at employee roundtable meetings that are hosted by the civil rights officer (ACT-9). Anyone who attends roundtable meetings knows that coalition members are active participants and agents of change.

Colon's peers respect her for her technical contributions to the Federal Telecommunications Infrastructure (FTI) program. She also knows when it's time to have fun. Colon is proud of her Hispanic heritage. She is quick to celebrate the diversity and rich-

ness of the Hispanic culture, and has been quite successful articulating the challenges and issues facing Hispanic employees. She has raised senior management's awareness and consciousness of under-representation. Colon defines courage, strength and pride, and is a role model.



Donna Young Non-Member of the Year

As part of its mission to be an "Employer of Choice," the Technical Center strives to create and maintain a diverse workforce that will make great contributions to the aviation system of the future, and meet the greater demands for safer and more secure air travel. With this goal in mind, **Donna Young** has always been a strong supporter of targeted recruitment at the Technical Center.

During FY-02, with a commitment from upper management for six entry-level technical positions, Young organized a recruitment team, consisting of **Dot Buckanin, Carole Bralski** and **Magda Colon**, with the

Other NHCFAE Award Winners



Anthony Rodriguez, ACB-820
Hispanic Employee Program Manager
Service



Jose Perez, ACB-310
Service



Myrna Rivera (left),
Acting Civil Rights Manager
Service

NHCFAE Awards

goal of developing a formal recruitment strategy for such positions at the Technical Center. She and the team put together a recruitment plan that covered statistics of hiring practices for entry-level positions, estimates for recruitment trips, a recruitment agenda, and a proposed budget. Once acquiring the necessary commitment from managers, Young, with the support of the team, began contacting colleges and universities to initiate recruitment activities. Special emphasis was placed on recruiting candidates from demographic groups that are underrepresented at the Center. A search began for students in computer science /information systems, electronic engineering and math.

Young participated in most of the

recruitment trips with the team and interviewed approximately 185 students at various schools. These included the University of Puerto Rico-Mayaquez, University of Puerto Rico-Ponce, Polytechnic University of Puerto Rico, Turabo University of Puerto Rico, Richard Stockton College of New Jersey, Florida A&M University, Howard University, Drexel University, Embry-Riddle Aeronautical University and others. The schools were selected based on their academic standing in particular career fields and the demographics of their student population.

After the recruitment trips concluded, Young organized the students' resumes and packages for management review, and also did follow up communication with some students for telephone interviews with selecting managers. Young

successfully completed the recruiting and hiring of some of the brightest and best graduating seniors. These were duties that she was performing in conjunction with her other responsibilities as a human resource specialist.

Young is also a participant in a major "bold step effort" to ensure that a percentage of all new hires go to entry-level candidates. This effort is overseen by the office of Human Capital Strategies and consists of representatives from management, human resources, and employee emphasis groups. Young continues to make sure that underrepresented groups are kept in mind for recruitment purposes. Her continuous support and dedication is a step forward for the FAA to mirror a diverse workforce. 🌐

NSBE-AE Awards Scholarships and Recognizes Members

On August 1, 2003 at Blue Huron Pines Golf Club, the South Jersey Alumni Extension of the National Society of Black of Engineers (NSBE) not only recognized its 2003 high school scholarship winners, Sorochi Esochaghi and Shalonna Walton, but also showed its appreciation for its members.

The presentations were made at the annual NSBE-AE, South Jersey Chapter, Scholarship Dinner. The keynote speaker for the dinner was Atlantic County Family Court Judge, the Honorable Susan Mavis. She spoke on the significance of giving back to the community. She also challenged the young people to be prepared to tackle the opportunities and challenges that life has waiting for them.

Following her presentation, for which

she received a standing ovation, presentations were made to the scholarship winners, followed by member recognition.

Walton, an Atlantic City High School senior, will be attending Rutgers University this fall, with a major in civil engineering, and Esochaghi, an Oakcrest High School senior, will be attending Dartmouth University, with a major in biomedical engineering.

NSBE-AE South Jersey Chapter awarded both students \$1,000.00 scholarships. The organization presents these awards every year to deserving high school students in the Atlantic County area.

Devon Thompson was recognized for his dedication to the Try-Math-A-Lon

program. Thompson, the NSBE-AE Try-Math-A-Lon chairperson, has shown a tremendous amount of dedication and personal commitment.

Joseph Sims was recognized for his dedication to the Mentoring program. As the mentoring chairperson, he has always looked for ways to improve what NSBE-AE is doing in the program, and how to better serve the students involved in the program.

Kevin Wideman, a long-time NSBE-AE member and co-founder of the South Jersey Alumni Chapter, was recognized for his unwavering support.

The chapter would also like to thank Clyde Lake, Cheryl White, Sheila Smallwood and her committee for selecting the scholarship winners. 🌐

Achieving Alignment

By Annie Clark

The FAA Strategic Plan (the 2004-2008 Flight Plan) lays out four goals that will meet the challenges facing aviation, including that of transforming the aviation system itself. These goals are to:

Achieve the lowest possible accident rate while providing **increased safety**

Provide **greater** national airspace system **capacity**, in conjunction with other stakeholders, to meet or exceed demand

Demonstrate **international leadership** through increasing the safety and capacity of the global **civil aerospace** system

Ensure the success of the **mission** through **organizational excellence** in the areas of stronger **leadership**, **performance-based management**, and improved fiscal responsibility.

For each goal, the plan defines the objectives, strategies, initiatives and performance targets to achieve the FAA's mission over the next five years.

Business planning is the process that will be used to translate the long-term vision outlined in the Strategic Plan into annual goals that will drive our day-to-day operations. The output of this process will be an annual **Business Plan**, similar to the **Performance Plan** required by the **Government Performance and**

Results Act of 1993. Line-of-sight for each FAA employee will be created as the strategic plan is cascaded throughout the FAA and line of business and operational level business plans are created.

It is in this annual plan that reference is usually made to specific projects and programs that will be undertaken. This business planning process also communicates the organization's priorities through initiatives, measures and targets.

The Technical Center began a **process to define its strategy, objectives, initiatives, measures, and targets over a year ago**. This work was aligned to the ARA FY2003 **Performance Plan** and the goals in effect for the FAA at that time. Using the **Balanced Scorecard** methodology, we defined four strategies:

To become the **employer of choice**
To manage customer relationships in order to deliver high value

To deliver innovative services and products that are of high quality, and
To operate as efficiently as possible.

For each strategy, the Center's Strategic Leadership Team defined the objectives, initiatives, measures, and performance targets that would help us become internationally recog-

nized as a leader shaping the future of aviation over the next five years.

With the creation of the 2004-2008 Flight Plan, we will now pause to ensure that ACT's plan is in alignment with it. Center employees (**Terry DiPompo** -- Organizational Excellence, **Bob Holladay** -- Capacity, and **Brian Colamosca** -- International Leadership and Safety) are currently participating in the development of an Acquisitions and Research (ARA) multi-year strategy and annual Business Plan. Others in the organization may be asked to participate as the plan progresses.

The draft ARA Business Plan will be presented to the Administrator in mid-September and finalized by the beginning of the next fiscal year, October 1, 2003. As the ARA plans are being developed, we will review our strategies and objectives to ensure that they are aligned to ARA and FAA, and that they still make sense for us.

We will also develop a Strategic Plan and annual plan, lagging the ARA development enough to continue to ensure alignment. The work that we have already done on the Balanced Scorecard will give us a head start on this process. Strategic and annual plans for the ACT organization should be completed by November 2003.

Engineering Support Contracts Awarded

By Holly Baker

The FAA William J. Hughes Technical Center recently awarded four contracts for long-term FAA engineering support services, each with a potential value of up to \$200 million. The 10-year contracts were awarded to: Computer Sciences Corporation, Rockville, MD; Northrop Grumman Space and Mission Systems Corporation, Reston, VA; Raytheon Technical Services Company,

Egg Harbor Township, NJ; and The Titan Corporation, Billerica, MA. The contracts cover the full spectrum of engineering support services. Under these broad open agreements, the four companies will compete for specific projects and delivery orders that are awarded over the 10 years. The contract vehicle that was used – the multiple area support services solicitation –

was created at the Technical Center. By design, it is a quick, easy-to-use, effective tool for the FAA, DOT and all other government agencies that may require engineering support services. The Center soon will announce contract awards in the small business, moderately small business, and socially and economically disadvantaged business competitive categories.

Post World War II: A New Era of Flight

By Barbara Harris-Para

World War II served as a great educator for the aviation world. There were many lessons learned that helped the aviation world experience an amazing amount of progress, despite a lack of funding. One reason for the advances was the combining of technologies of two of the war's aviation leaders – Germany and the United States. Much of the German scientific advances were brought to America. The Air Force Scientific Advisory Board, in cooperation with the Rand Corporation, a nonprofit organization, was created to help facilitate new and existing research projects.

During World War II, the Army Air Force operated as a totally separate force. At the urging of individuals like Billy Mitchell, a separate air force was established. President Harry S. Truman signed the National Security Act of 1947 into law on board the presidential aircraft "Sacred Cow," establishing an independent Air Force for "offensive and defensive air operations," and allowing each branch of the service an equal level under a civilian Secretary of Defense.

Jet propulsion was the most significant advancement of the times in aviation, but aerial refueling, ejection seats, improved materials, solar observations, nuclear weapons testing, weather capabilities, high altitude research and other flight techniques were also in the forefront. All these areas of aerodynamics, materials, and expanded performance of aircraft were new frontiers for the world of aviation.

In 1949, a supersonic Ground-to-air-non-pilot aircraft (GAPA) was launched at Holloman AFB, NM.

During the testing phase more than 100 GAPA were developed for research in defensive weapons against future bomb attacks. Strategic and Tactical Air Commands (SAC and TAC) were created in March 1946, establishing the offensive composition of the USAF.

The Manhattan Project took place from 1942-45 with the exploding of two bombs. The post-war test took place during Operation Crossroads at Bikini Island Atoll in the Marshall Islands in July 1946. The bombs had only a small amount of power, that the "Minuteman missile," which came after the war. Minuteman and similar missile silos were established throughout the U.S. At the same time, Chuck Yeager flew faster than the speed of sound (Mach 1.06 at 43,000') for the first time in a rocket-powered **Bell X-1**. In 1953, Jackie Cochran became the first woman to fly faster than the speed of sound.

World War II aircraft were used for both SAC & TAC, but the advent of the Korean Conflict in 1950 expanded the types of aircraft, that the USAF used against the potential enemy. Aerial refueling made it possible for SAC to expand its reaches around the world, thus beginning our deployment of aircraft worldwide. At the same time, the Soviet threat was advancing with their thermonuclear hydrogen bomb, tested for the first time in 1953. This led to another arm of TAC called, "Composite Air Strike Force," (CASF) having the capability of fighters, transports for airlifting men and equipment, tankers for mid-air refueling and reconnaissance planes for aerial photography around the world. The first deployment of the CASF was in July 1958.

Within three hours of receiving an alert that there may be an overthrow of the Lebanon's president TAC had planes on their way. Six weeks later they were on the move as the Red Chinese announced they were going to attack the island of Quemoy occupied by Chinese Nationalists (Taiwan). Fortunately the Communists didn't carry out their threats.

Improved jet aircraft after WWII used large volumes of fuel, especially at low altitude. Engineers worked to reduce the consumption. To make the power plants more efficient, some of these the **F-84, F-86, F-89 and F-94** were produced in significant quantities. Only the **B-45 and B-47**, which were jet-propelled aircraft, were ordered in the late 1940s. A few of the needed items for these planes were load capacity and range rather than speed.

The first commercial aircraft that could carry more than 100 passengers and huge amounts of cargo was the **Stratocruiser** in making the cost of traveling by air more affordable. The Fairchild C-82 Packet was the huge cargo carrying aircraft for the military. After the war, there was an enormous increase in the use of aircraft for civilian purposes.

Speed eliminated the need to sleep on aircraft for the long overseas trips. These large heavy and fast aircraft were the 70-ton Martin **Mars's flying boat**, Pan American Consolidated 204 passenger Model 37. Donald Douglas built the DC-6 and 108 passengers DC-7, Lockheed's **Constellation** began service to compete with Douglas aircraft. Helicopters were supposed to become a widespread aircraft, but were not as reliable.

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Atlantic City Air Show Huge Success

By Mary Lou Dordan

The roar of the F-14s, F-15, F-16s, F/A-18s, KC-10, B-29, C-17s, C-130, P-51s, and A-10s aircraft drowned out the sounds of the surf at the Atlantic City Boardwalk on August 27 when the largest airshow to visit that city in many a decade hit town. The show began with the famous United States Army Golden Knights Parachute Team dropping from their aircraft high overhead onto the beach with the American flag in tow. There was non-stop excitement during the next four hours as aviation history was displayed via the aircraft that worked to keep America the "land of the free." The event featured the renowned air show announcer Gordon Bowman-Jones, as he provided information to the crowd of the place in history earned by each of these airplanes.

The William J. Hughes Technical Center participated in the air show with a display on the Boardwalk and a visit by our FAA mascot, Air Bear. The temperature that day was in the



90's with a humidity level to match. A big thank you goes out to **Janet Kinsell** for her help in staffing the exhibit and to **Rosanne Weiss** for her stamina and dedication as she greeted people in the Air Bear costume for over an hour along the Boardwalk and beach. It is a good thing bears are drip dry, since parents were calling their youngsters out of the water just so they could meet Air Bear. It isn't every day a child can hug a bear at the beach.

This exciting day of aviation history and entertainment was sponsored by the Boyd Gaming Corporation's Borgata Casino & Spa in cooperation with the 177th Fighter Wing, the New Jersey Air National Guard, and Atlantic City. More than 200,000 people were estimated to have been on the Boardwalk and beach area during the four-hour air show.

A New Era in Flight

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The British were designing the turbojet **de Havilland Comet** for long distance routes. The **Comet** inaugural flight was in 1952, which brought about the age of **jet-powered air transport**, but the **Comet** had major problems. Flying as high as 35,000 feet resulted in a series of unexplained crashes that occurred in

1953-54, it was later found to be structural failure due to pressurization of the cabin. The major change in world transport came out of military requirements and research. The design of the **B-47 and B-52** jet bombers led to the idea that jet tankers could be adapted to an airliner. The KC-135 Boeing's prototype

jet airliner, the Dash 80, and later developed into the Boeing 707.

During this period of time, people were still traveling the U.S. by train, and the preferred crossing of the oceans was still ocean liners. Next month's article will be the "Dawn of the Space Age."

“Aviation’s Future Begins Here”

45th Anniversary

By Stan Ciurczak



The Boeing KC-135 Stratotanker, a military variant of the 707, was used by the CAA and later by the FAA (1957-58) to help establish new approach procedure guidelines on cloud-ceiling and visibility minimums for Boeing’s first jet airliner, the B-707.

This story is a continuation of the 45th anniversary celebration story that appeared in last month’s issue. The National Aviation Facilities Experimental Center (NAFEC) and the Technical Center have made many, contributions, too many in fact to list here. This is the first part, in a two-part article, that will highlight these accomplishments. It is these accomplishments that are a testament to the contribution that this facility and the people who work here have made to aviation and its advances. Here are some of the top achievements of this proud organization during the past 45 years.

NAFEC Achievements

NAFEC engineers took on a wide range of projects in the early years despite an engineering “brain drain” resulting from friendly competition for engineers, due to the race to the moon and various military research programs, resulting in a shortage of technical personnel at NAFEC. These projects ranged from refining the

VORTAC (a ground-based navigational aid that provides aircraft with navigational azimuth of 360 degrees and distance measuring via a transmitter) to developing new techniques for fire detection and prevention, new forms of runway illumination and new materials for airport surface markings. NAFEC engineers also worked on aircraft conspicuity, collision-avoidance and proximity-warning devices. Early technical reports included: *High Speed Communications Equipment; A Study of the ATC Radar Beacon System Characteristics; Airport Runway and Taxiway Design; Analysis of Meteorological Requirements; Dynamic Simulation Tests and Systems Study of IFR Operations in Los Angeles Area; Runway Touchdown Zone Lighting for Dulles International Airport; and Operations Analyses of Air Traffic Demands and Delays in the New York ARTCC.*

NAFEC engineers invented the first radar data compression that allowed alphanumeric data tags to track alongside targets on controller termi-

nal radar Plan Position Indicator displays in the Airport Surveillance Radar system. This was achieved around 1965. Safety and controller confidence took a great leap forward around 1968, when NAFEC engineers designed and built a system called Beacon Numerics. This system gave enroute controllers the first alphanumeric data tags on long-range radar displays, with beacon code and altitude information, that tracked targets on scan-converted Radar

Bright Display Equipment display systems in two enroute centers. Around 1972, NAFEC developed the first electronic flight strip display system, which was also finger-touch input for enroute applications.

NAFEC’s engineers maintained a steady course of aviation safety and air traffic control research and development from aging labs and facilities. In the early 1970s, for example, FAA’s researchers published a wide variety of research results, including: *Flight Safety Aspects of Radar Techniques in Bird/Aircraft Collision Avoidance; Oceanic Surveillance and Navigation Analysis; ATC/CAS Interface Simulation – Exploratory Phase; Vortex Sensing Tests at NAFEC; and Collision Avoidance System Analysis.*

Around 1973, NAFEC developed the first fully sunlight readable display for use in a tower cab. The Low Level Windshear Alert System is a system of wind sensors and processors that detect and identify hazardous low-level windshears and provide real-

Aviation's Future



This photo shows a civil rights meeting that was held at NAFEC in 1970.

time information to controllers. The system is designed to warn pilots of imminent windshear hazards, including microbursts, on approach to and departure from an airport. NAFEC engineers, in the late 1970's, also were the first to flight-test and approve the use of Global Positioning System for non-precision approach aviation use.

Technical Center Achievements

After NAFEC was renamed the FAA Technical Center in 1980, the Center provided critical support for numerous aviation safety research and development projects. Some of the most noteworthy were related to the development of regulations for cabin fire safety, modified fuels, crashworthy-

ness, fire safety and icing technology, and the enhancement of airport lighting and marking standards.

The Technical Center created the FAA's Aviation Research Grants and Centers of Excellence programs. Through aviation research grants, the FAA supports advanced research in areas of potential benefit to the long-term growth of civil aviation in areas related to the prevention of catastrophic failure, and the implementation of technologies and procedures to counteract terrorist acts against civil aviation. FAA Centers of Excellence bridge the gap between government, academia and industry by bringing together the best minds in the country to assure that the U.S. air transportation system remains the

safest, most secure and most efficient in the world.

The Technical Center has made major contributions in the area of separation standards. The Center conducted research, testing and validation of advanced aviation separation and airspace concepts in analytical and modeled environments to determine its technical and operational performance suitability and usability. It continues to provide analytical assessments of the relationship between separation standards, emerging technology concepts and new procedures for use in developing future airspace separation minima (minimal vertical separation between planes).

The Center developed first, second and third generation automation of the Air Route Traffic Control Centers (ARTCC) for enroute, terminal and flight service stations.

Many enhancements in the Traffic Alert and Collision Avoidance System (TCAS), weather, oceanic, flight service standards, radar systems, enroute/terminal displays, and communications were created here, as was the first National Airspace System (NAS) Plan. The first entirely electronic (no paper) tower cab display and control system for airport controllers was built at the Center in 1982, combining most cab functions and display equipment into personalized workstations that were fully readable in full sunlight.

While assisting the Department of Justice in 1988, Center computer experts did some major technical detective work that helped overturn the basic patent for alphanumeric

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Examining USERRA, Public Law 103-353

By Tom Woods

In 1994, President William J. Clinton signed into law the Uniform Services Employment and Reemployment Rights Act (USERRA), which protects the job rights of people entering the uniformed services from a civilian job. The law covers all Federal employees, including those serving time-limited appointments.

Under USERRA, a Federal employee who is called into military service (or volunteers for active duty) has restoration rights up to a cumulative total of five years of military service. USERRA also expanded the definition of creditable military service by including time served in the National Guard.

Following are some of the benefits that apply to employees called from federal civilian service to active duty: If you are covered by the Federal

Employees Health Benefits Program, you can continue your health benefits enrollment for 18 months.

Your Federal Employees Group Life Insurance coverage continues for 12 months at no cost. Annual leave may be paid or remain to your credit, whether you separate employment or go on leave-without-pay status.

When you return from military service and exercise restoration rights, you may make up contributions to the TSP that were missed because of military service. You will be able to take two times the length of your military service to make up the contributions. These TSP contributions must be through payroll deduction.

Honorably discharged individuals seeking to be reemployed must apply within certain time limits. For exam-

ple, if you served from 30 to 180 days, you must apply for restoration within 14 days after your service ends. If you served more than 180 days, you must apply within 90 days after your service ends. Within 30 days after you submit your application, the agency must re-employ you.

Many of the rights and benefits under USERRA are complex. Employees who receive orders for military service should contact the human resource consultants in ACT-10 for information about their USERRA rights. In addition, employees returning from military service should notify ACT-10 as soon as possible to complete their application for re-employment.

You can view more information concerning USERRA and other Veteran's information at <http://www.opm.gov/veterans/index.asp>

New Chief Counsel Tours Center

By Stan Ciurczak

Andrew B. Steinberg, who was appointed by President Bush in May 2003 as the FAA's chief counsel, recently took time from his busy schedule to tour the William J. Hughes Technical Center. He also spent time meeting with the Center's legal staff (ACT-7). At the end of the day he expressed his enthusiasm and "tremendous respect" for the work that is being done at the Center. He said he "thoroughly enjoyed" touring the labs and meeting with managers and employees.



As the top legal advisor to **Administrator Marion C. Blakey**, he oversees a staff of 290 people, includ-

ing approximately 200 lawyers, who are located throughout the FAA. He provides extensive support for the agency's multi-billion dollar procurement and airports programs. Steinberg also is responsible for the regulatory program, administrative and judicial litigation, nationwide enforcement activities,

legislation, alternative dispute resolution, ethics compliance, and legal relations with foreign civil aviation authorities.

Prior to joining the FAA, he was executive vice president-administration,

general counsel and corporate secretary for Travelocity.com, Inc., an online travel services company. He was executive vice president, general counsel and secretary of Sabre, Inc., a leading provider of computerized reservation systems and information technology to the travel industry from 1996 to 2000, and the associate general counsel in charge of American Airline's employment and environmental legal practice before that.

A graduate of Princeton University (*magna cum laude*) and Harvard Law School (*cum laude*), Steinberg clerked for the Honorable Richard A. Gadbois, Jr., in U.S. District Court, Central District-California. He and his wife Roxann have two children.

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This photo of NAFEC was taken in 1967, which was 9 years after the FAA took over the site of the former Naval Air Station Atlantic City. The front gate for NAFEC later became the front gate for the 177th Air National Guard.

imagery on a computer display. This meant that the government and the American public could purchase computers without paying royalties for any character or text generation on Cathode Ray Tube monitors (CRT) or Liquid Crystal Displays (LCD), helping to avoid literally hundreds of millions of dollars of unjust costs. When the FAA gave its final approval in 1990 to implement ATC communications via satellite relay, the Technical Center created the largest full-scale simulation to date, which proved that controllers could use satellites for effective voice communications in Alaska and the Caribbean.

The heart of all the aviation security technology that is out there today was developed here as well. In the 1970s, the walkthrough metal detector was developed and deployed with cabinet x-rays to screen passengers and carry-on bags at checkpoints throughout the United States, following a number of hijackings. Congress

passed the Non-Conventional Weapons Detection Act in response to aviation bombings by small religious terrorist groups in 1986, which required the FAA to develop technologies to find other threats including explosives. The Technical Center developed the Thermal Neutron Analysis (TNA) system with SAIC Inc., and the first bulk-explosives detection system. Five units were built and initial deployment testing was performed at Heathrow Airport (London), but the bombing of Pan Am Flight 103 in December 1988 over Lockerbie, Scotland, demonstrated that the TNA could not meet the new detection requirements.

Congress passed the Aviation Security Improvement Act of 1990, which required the FAA to expand and accelerate its program for developing Explosives Detection Systems (EDS), and to certify these systems against the detection of very small amounts of various types of explo-

sives. The FAA created an Aviation Security Research and Development Service at the Technical Center in August 1990 to meet these mandates. A newly constructed Aviation Security Laboratory opened at the Technical Center, in 1992, to support this mission.

The Technical Center worked with industry to develop Explosive Trace Detection devices that could detect explosive particles on people, cargo or the surfaces of bags, and the first regulatory certification program for explosive detection devices. The first certified EDS, built by InVision Technology, Inc. was certified in December 1994, and five units were deployed in 1995 and 1996 for operational testing. The Center also developed Trace Explosive Standards for explosive particle detection, standards that are recognized throughout the world.

In July 1996, TWA Flight 800 exploded after takeoff from JFK. President Bill Clinton formed a commission, led by Vice President Al Gore, to investigate aviation safety and security. The commission recommended that the FAA should procure and help the airline industry to implement EDS for screening checked bags.

In October 1996, a Technical Center employee was asked to create and lead the Security Equipment Integrated Product Team, which was responsible for acquiring and deploying EDS in U.S. airports. The Center created a Computer Assisted Passenger Prescreening System, in 1996-1997, to identify known and unknown passengers, and to concentrate the screening of checked bags for all unknown (selectee) passengers. 🕒



FAA Announces New CRDA

The FAA has recently entered into a Cooperative Research and Development Agreement (CRDA) with Foamex L.P. The collaborative research is related to aviation safety. This project is supported through the Airport and Aircraft Safety Research and Development Division, Office of Aviation Research, which performs research on aircraft fire safety and structural integrity.

Foamex Polyurethane Safety Foam has been used for 30 years to suppress fuel tank explosions in military aircraft and land vehicles. The objective of this research may lead to the introduction of newer foams, which may have a lower density and displace less fuel than current foams. Both existing generation and these newer foams will be subjected to crashworthiness tests, seeking the determination of the foam's effectiveness in suppressing post-

crash, fuel-fed fires.

The Government's Principal Investigator is **Gary Frings** (609) 485-5886 located at the William J. Hughes Technical Center, Atlantic City International Airport, N J 08405. The Principal Investigator for the Collaborating Research Organization is John Galbraith, FOAMEX, L.P., 1500 East 2nd Street, Eddystone, PA 19022 (610) 499-3727. This CRDA was awarded on July 28, 2003, and has a duration period of 12 months. The results are expected to be a determination of whether or not foams reduce the severity of post-crash, fuel-fed fires by mitigating fuel tank rupture and/or fuel atomization during the impact.

If you have any questions regarding this CRDA, please contact **Deborah M. Germak** at (609) 485-9862. ☎

Obituaries

HARRY L. FOWLER, JR., 66 - of Absecon, passed away August 23, 2003 at the Atlantic City Medical Center-Mainland Division, Galloway Township. He was a graduate of Holy Spirit High School Class of '54. He was a long-time FAA employee and retired with more than 35 years of service.



He leaves behind his loving wife, **Lois**; daughters: Susan and Deanna; son Jake and two grandsons: Kevin and Matthew; brother Barry Fowler and sister **Patricia Brown** and many friends who will all cherish his memory. He will be sorely missed by all

whose lives he touched.

Donations may be made to the Juvenile Diabetes Foundation of south Jersey, 295 Route 70 West, Suite 2, Cherry Hill, NJ 08002

ROBERT WILHELM SWANSEEN, 82, of Linwood, passed away on August 22. A native of Kane, PA, he had recently celebrated 59 years of marriage to his wife, Betty. After serving in the U.S. Navy in World War II, he worked for the FAA in Syracuse, NY. He worked at NAFEC from 1960 to 1971, retiring as a branch chief.

Contributions in his memory can be made to the Alzheimer's Research Fund. ☎

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

The answer to last month's Aviation Trivia question, which famous and highly-successful aviation inventor, also invented the "not-so-successful" eight-track tape player, is William Lear, inventor of the Lear Jet.

