



# INTERCOM

Volume 1, Issue 1

November 1998

## Message from the Director

### *Intercom* is Back!



I am delighted to have this opportunity to participate in the inaugural edition of the new Tech Center *Intercom*. It has been over two years since we last published *Intercom*, and its return has been long overdue.

Our hope is that *Intercom* will transcend the various FAA lines of business represented at the Tech Center, as well as our neighbors and friends at the Air National Guard, the Coast Guard, and the Atlantic City International Airport. This newsletter is about the entire Tech Center community. Everyone here is part of our family. We have a long history of working together – making this a great place to work.

Recently, Secretary of Transportation Rodney Slater called upon DOT employees to get involved and provide the leadership necessary to reinvent the department's workplace culture. He hopes that his ONE DOT vision will help establish an integrated, collaborative work environment that reaches across modes and agencies at all levels to provide better transportation services and support better transportation systems for the new century. Secretary Slater has challenged employees and managers to “create a climate in which good ideas will flourish and mature.”

I firmly believe that the Secretary's vision has long been reality for the Tech Center. Here FAA employees from ARA, ATS, and ACS, work side-by-side with a large contractor workforce to get the job done. Our ability to cooperate and work with our neighbors at the Air National Guard, the Coast Guard, and the South Jersey Transportation Authority, is indicative of our success in establishing an integrated work environment that supports the needs of everyone. We have long proven that by working together we can create and foster an atmosphere that meets the needs of everyone located here.

I can think of no better way to keep the entire ACT community informed and involved, than through our new *Intercom*. This newsletter is written and produced for and by our employees.

I want to take this opportunity to introduce our editor. Terry Kraus is currently a writer/editor with the FAA's Office of Aviation Research (AAR)

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## Food, Fun, and Games – All For a Very Good Cause

On October 6, the Tech Center kicked off this year's Combined Federal Campaign (CFC), providing employees a chance to assist 2,500 local, national, and international charities through payroll deductions and cash contributions. This year, the Center's CFC activities are part of larger effort in which South Jersey's six largest counties have combined their United Way campaigns.

ACT-1's Rodger Mingo once again is serving as the Center's Team Captain. However, Rodger has a lot of help

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and author of AAR's quarterly newsletter, *Aviation Research NewsWatch*. She holds a Ph.D. in history from the University of Maryland. Before joining the FAA in 1981, she worked as a historian at both the Naval Historical Center and the Army Center of Military History. She is one of the authors and co-editors of the U.S. Army's official history of Operation Desert Shield/Storm, and has published a variety of articles on military, aviation, and other topics. Her recently declassified history of naval actions during the Bay of Pigs operation in Cuba is currently being prepared for publication by the Naval Historical Center.

Terry is the first to admit that *Intercom* is not a one-person enterprise. This issue would not have been possible without the help and support of everyone here. To make *Intercom* a success, however, we need your continued input. We welcome your comments, ideas, and help. Our newsletter can only be as good as the information we receive!

--Anne Harlan

(*CFC continued from page 1*)



The pancake breakfast clean-up crew

this year. All of the division managers have volunteered to take full responsibility for their own divisions — selecting key workers, encouraging employees to participate, and leading fund raising activities.

“This year's campaign is proving to be a lot of fun,” admits Rodger. “With the managers so involved in the process, we're seeing a lot of activity and that is proving very effective for the



AAR-500 Bagel Sale

campaign. This is exciting for the employees and very good for CFC.”

Since CFC is scheduled to end on November 20, the divisions have already held or have scheduled a number of fund raising events. Perhaps you've already participated in some of these perennial favorites: the ACT-1 through -9-sponsored pancake breakfast; ACT-70 and -300's Taste of South Philly; the AAR-500 bagel bash; the ACT-10 and AOS-400 golf scramble; the ACT-600 White House sub sale; ACT-30's penny jar raffle; ACT-500's run/walk; the ever popular ACT-50 parking space raffle; and AAR-400's chili cook-off.

“As you know, participation in the CFC is strictly voluntary,” reminds Rodger. “However, I encourage everyone to take the time to talk to either me or their keyworkers and look through the *Catalog of Caring*.”

The Center hopes this year's campaign will be as successful as last year's. Last year's CFC goal was to raise approximately \$65,000 in contributions — ACT surpassed that goal, raising almost \$72,000. An incredible feat for so few employees! This year's goal is \$70,000.



## Software Engineering Resource Center

Did you know that the Tech Center has a place where you can go to get answers to your immediate and long-term software engineering needs? A place where you can ask world-class software engineering experts questions that are specific to your organization?

That place and that staff can be found at the FAA's new Software Engineering Resource Center (SERC), with two convenient locations -- one at the Tech Center and one and at Headquarters.

But, what is the SERC and how can it help your organization?

The Resource Center is a joint venture of the Chief Scientist for Software Engineering (AIT-5), the Technical Center (ACT), and the Operational Support organization of Airways Facilities (AOS).

According to Pat Lewis, the SERC's program manager, "it is a FAA-wide resource to improve FAA's software technology base and the software engineering competencies of its staff." The Resource Center leverages government, academic and industry resources to analyze and solve mission-critical problems, watch evolving technologies, and extend the state of the art and practice of software engineering at the FAA and its system suppliers. By considering strategic software technology issues, it serves as a focal point for software and systems engineering research, education, advice and evaluation.

### How the Resource Center Can Help You

The Software Engineering Resource Center supports FAA organizations through:

- Consultation and evaluation
- Applied research
- Software technology insertion

It can provide short-term collaborative help to solve a wide variety of software engineering problems. SERC-associated experts already involved in similar problems, familiar with the FAA and its structure, and available without complex funding arrangements, can react quickly to meet programmatic needs. It can also provide



Pat Lewis at the helm

software and systems engineering evaluations for programs or organizations.

The Center undertakes focused applied research in areas of software and systems engineering as applied to the architecture, design, acquisition, certification and evolution of software-intensive FAA systems. Applied research projects are undertaken in partnership with stakeholder organizations, and have a longer-time horizon than consultation/evaluation projects. An example of a current SERC applied research project is cost estimating for COTS-based systems.

The Center staff can also facilitate software technology insertion and software competency enhancement in your organization. Organizations are encouraged to detail staff members to participate in SERC projects where they can work shoulder-to-shoulder with world-class experts. Such participation provides a superior technology-transfer vehicle, based upon actual experience within the FAA society. Additionally, because the Center works with experts on key software technologies affecting the FAA, it can quickly provide technology briefings to managers and practitioners.

### Improving Competencies

Through education, training, and hands-on experience, the Resource Center provides opportunities for FAA employees to gain knowledge, skills and enhanced competency in a variety of new and advanced software-related technologies. The collaboration of government, industry and academic talent energizes the

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workforce and supports the movement of the FAA toward becoming a learning organization. Personnel from operational and acquisition organizations can rotate through the center. Through solving problems directly related to their primary jobs, they learn about new technologies and then return to their organizations to transfer that knowledge into action.

### Customers

The Resource Center serves FAA system architects, acquisition specialists, operational, regulatory and certification personnel, and maintenance organizations. For additional information, contact: Patrick Lewis  
Program Manager  
(609) 485-9000

William Hoffman  
Deputy Program Manager  
(609) 485-5719

Or visit the SERC webpage at:  
[www.faa.gov/ait/serc](http://www.faa.gov/ait/serc).

## New Beacon Surveillance Testing Underway for '99

ACT-310 personnel have been working hard to ensure FAA's new Traffic Control Beacon Interrogator replacement

tems (ATCBI-6) will be ready for deployment on time.

This past August, the FAA selected Raytheon to manufacture and install up to 152 new monopulse secondary surveillance radars for the ATCBI-6 program. The FAA chose the Raytheon System (figure 1) after a successful run-off against other competition conducted at the Technical Center's Test Bed (see figure 2, Bldg. 162, Operational Capability Test antenna and Data Reduction and Analysis facility).



(Figure 1)

sound infrastructure to allow transition to the Free Flight environment envisioned for early next century.

When Development Test and Evaluation (DT&E) begins at Raytheon's facility in Harlow, England, in January, ACT-310 technical and test support personnel, manager Raymond Alimenti, Andrew Leone, Joe Starkman, Rich Soucy, and Phil Barbagallo, will oversee and support the effort. The tests, which will run through June, will consist of nine separate major systems tests to verify specification requirements prior to fielding the system in the U.S.



(Figure 2)

manufacturing organization at Harlow, England. Following the DT&E effort, Production Acceptance Test and Evaluation activities will be performed to assure quality during the production phase of the contract.

ACT-310's personnel will be working as part of the FAA's System Engineering and Test Product Team (SETPT), which oversees DT&E.

Also included in the SETPT are members from the Raytheon Systems Company, Raytheon Systems Limited, and Sensis Systems Engineering.

The ATCBI-6 program will replace aging civil air traffic control radar beacon systems used to obtain information from aircraft, including discrete identification, altitude, airspeed, direction, and avionics readouts. The new radar systems will integrate with existing primary surveillance radar operated by the FAA and the Department of Defense and will help provide a

The DT&E tests are part of just one phase of overall system testing. Manufacturing tests, conducted as part of the normal factory process, precede all other test events, and are performed by the

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The ATCBI-6, when fielded, will be the third and last phase of the NAS field implementation of secondary radar system upgrades.

## ACT-350 Puts Data Link in the Spotlight

On two 20-foot screens, and to the entire gathered assembly of the National Air Traffic Controllers Association Convention (NATCA), in the largest ballroom in the northwestern U.S., a new video tape entitled, *Aeronautical Data Link: The Key to the Future*, premiered in Seattle, WA, over the Labor Day weekend.

The video provides an overview of how Data Link, specifically, Controller Pilot Data Link Communications (CPDLC) will benefit controllers and pilots. In its simplest form, Data Link will replace or supplement many of today's routine voice messages with non-voice, digital messages. When fully implemented, Data Link will use a variety of communications pathways, including current air/ground systems such as Very High Frequency (VHF), satellites, secondary radar, airborne and ground networks.

At the convention, NATCA President Mike McNally introduced the 12-minute video, produced jointly by NATCA, Aeronautical Radio, Inc. (ARINC), Boeing, and the FAA. FAA Administrator Jane Garvey, the keynote speaker at the convention commented, "the video was fantastic. A good example of how we can make partnerships work to everyone's advantage." The Administrator's speech, interrupted by several standing ovations, stressed the importance of partnerships between the FAA, the unions, and industry.

The question most asked by the 1,000-member audience of air traffic controllers after seeing the tape, was "Just how soon can we get Data Link into our control rooms?"

ACT Television Production Specialist Dale Dingler and the ACT-73 Television Facility provided videotaping and duplication services and ACT-350 personnel Evan Darby, George Chandler, Jim Merel,

Cuong T. Le, and Joe Lunder provided technical support and coordination for the video.

The studies used to develop the information in the videotape are the *User Benefits of Two Way Data Link Communications: Aircraft Delay and Flight Efficiency in Congested En Route Airspace*, and *The Benefits of Controller-Pilot Data Link ATC Communications in Terminal Airspace*. Copies of the studies may be obtained via the Internet at <http://www.tc.faa.gov/act350.html>.

For additional information about the video please contact Rich Pendergast at (202) 554-8404, ext. 3014.



## News from Around the Center

Every month this column will feature news submitted by the ATC community to keep you informed on what's happening, who's doing what, and what's coming. If you want to submit information for your organization, please contact Terry Kraus.

### Maria Marks (ACT-4) reports . . .

Service certificates were recently presented to Maudie Powell for 25 years of government service and Carole Bralski for 15 years years of government service. Everyone who knows Maudie and Carole know they will do anything to ensure the Center is operating in compliance with regulations and at an efficient level. For example, throughout the government property evaluation, Carole along with team lead, Maudie Powell, demonstrated their flexibility in getting the job done, even climbing a truck ladder in search of a bar code on a laser aircraft tracker. The results of their efforts are presented in the appraisal brief, "Evaluation of the Personal Property Management Process at the William J. Hughes Technical Center," dated July 10, 1998.

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### **Patty Reichenbach (AAR-201) reports . . .**

Jennelle Derrickson and Pete Sparacino have received an award from Secretary of Transportation Rodney Slater for their work on the DOT Technology Transfer Working Group. They received the award, titled "Find The Good And Praise It," for their work on the DOT Technology Transfer Guidebook and web site. These were the working group's first efforts in providing information on technology transfer activities

### **Murray Karlin (ACT-300) reports . . .**



Dorothy Buckanin, ACT-300 Division Manager, also received a "Find The Good And Praise It," award from Secretary Slater. Dot earned the award for her "individual commitment for fulfilling the Department's mission with vision and vigilance."

Jim Eck has recently been promoted to NEXCOM Deputy Project Lead for Engineering.

ACT-300 also welcomes new employees: Danny Sims (ACT-320); Tayo Olagunju (ACT-330); Richard Dunklee (ACT-330); Howard Sheckman (ACT-340); and Steve Ferra (ACT-350).

### **Hank Marek (AAR-400) reports . . .**

Congratulations to John Fabry, Manager, Airworthiness Assurance R&D Branch (AAR-430). After 7 years of study in an Interdepartmental program, Communications and Information Sciences, John received a Ph.D. in Information Science from Rutgers University, New Brunswick, NJ. John was supported by his friends and management in AAR-400 throughout this endeavor, and especially by his wife Kathy, and his 2 children who are also in college, Magen and Michael. Congratulations John!

### **Kim Van Dongan (ACT-500) reports . . .**

ACT-530's newest employees are Ben Willems and Tanya Yuditsky.

Ben Willems is an engineering research psychologist in the human factors laboratory. Born in Amsterdam, the Netherlands, Ben studied mechanical engineering at Eindhoven University of Technology, where he received his first introduction to human factors and ergonomics. After moving to the United States, he earned an M.A. in Ergonomics and Biomechanics from New York University, where he is currently pursuing a Ph.D. Before joining the FAA, Willems worked for five years at the Hospital for Joint Diseases in New York City as an ergonomics and biomechanics researcher. There he conducted basic biomechanics research as well as industrial and office ergonomics evaluations. His specialization was the effects of occupational vibration exposure on the lower back and extremities. In 1995 he joined System Resources Corporation and supported the FAA's Human Factors Laboratory in their Air Traffic Control Visual Scanning Research Program. Excited by the exposure to the research psychology in air traffic control and aviation in general, he joined ACT-530 this past September.

Ben is truly a product of the cyber-generation. He met his wife, Lourdes, through BITNET, the Internet's predecessor. After several months of electronic exchanges, they finally met and were married in New York City in 1988. He also found his first job and house through cyberspace. Ben and Lourdes have

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three kids: Cynthia (6), Stephanie (4), and Benny (1). When he's not playing on his computer (no computer is safe when he's around!), Ben likes to tinker around the house and read.

Tanya Yuditsky, born in Minsk, Russia, immigrated to the U.S. (New York) in 1979. She recently received a Ph.D. in Cognitive Psychology from New York University, where she studied the cognitive processes used in object naming. "In plain English," she explains, "I asked how we know what to call the objects around us; the things we sit in, look at, point to, etc." While at NYU, she also became involved in developmental and memory research. In 1997, she joined the Federal Data Corporation team supporting the FAA's human factors and aviation security branches. She joined ACT-530 as an engineering research psychologist in September.

Tanya is fascinated by anything that has to do with the brain and how it works. She's been married to husband John since 1995, although they've known each other since 1989. They love to travel, go to the movies, and spend time with friends and family.

If you see Tanya or Ben around the Center give them a big ACT welcome!

Also, kudos to the Aviation System Analysis and Modeling Branch (ACT-520). Recently George Herndon, Manager of the Central Region's Airports Division (ACE-600), sent a letter of appreciation thanking ACT-520 for its help in "conducting various analyses and simulations to support our lengthy and exhaustive study of airport expansion plans proposed by the City of St. Louis for their Lambert-St. Louis International Airport . . . the work of the Branch has been invaluable to us in the prolonged study effort and we want the staff to know how much we appreciate it. We particularly commend John VanderVeer, Robert Holladay and Albert Schwartz who labored so effectively in responding to our most recent request."

## CM Unleashed

Over the next several months, Cathy Jaggard in ACT-400 will highlight parts of the Configuration Management (CM) process to increase your understanding on why the process is being implemented and how you can be a vital part of this process.

CM maintains control, consistency, and integration of all versions of hardware, software and related documentation throughout the project life cycle. CM has four components which are configuration identification, configuration change control, configuration status accounting, and configuration audits:

- ⇒ Configuration Identification uniquely identifies the items which will be monitored, tracked and controlled within the CM process;
- ⇒ Configuration Change Control enables requests for change to be uniquely identified, assist in determining which items to change, notify those involved of the pending/approved change, and track the change to integration with the items to be delivered;
- ⇒ Configuration Status Accounting reports on the status of the configuration items and their associated documentation throughout the project life cycle; and,
- ⇒ Configuration Audits ensure that the current version of the "product" complies with its specified requirements and that the version actually reflects all its associated documentation.

A good exercise this month is to take what you do for a living and outline how configuration management can be applied. Once your list is complete, you are on your way to being CM compliant.

If you need additional information or need to ask a question on the CM process, please contact Doris Hopkins via cc:Mail. All questions are welcome!

## It's Almost Ready . . .

In case you're wondering, the Security Operations Center (SOC) is currently scheduled for completion in mid-December.

The facility will house the contract security guards that will assist all visitors in obtaining visitor passes. The SOC will also have an area where employees can obtain their access badges, renew expired badges, and obtain parking decals. A small conference room in the building will provide room to meet tour groups and provide them with an overview of the Center. While in the lobby, visitors will be able to get informational brochures and view displays on Center activities.

AAR-500 will use a portion of the facility as a Security Research and Development laboratory. This laboratory will have a three-fold purpose: test and evaluation of new screening equipment, beta testing of security methods in a functioning environment, and open house tours. The SOC lab will assist AAR-500 in achieving its' program goals for Fiscal year 1999 and subsequent years. In addition, with AAR-500's evolving mission to provide technological support to the aviation industry, this lab will facilitate an expedient deployment of global technologies and newer concepts to the field. For additional information on AAR-500 plans for the SOC, please contact Dave Taylor (AAR-500).

The brainchild of Walter Wall (AAR-510) and Dick Battaglia (ACT-600), SOC construction was headed by Ray Dumas (ACT-611) and upon completion will be managed by ACT-600.



## Headquarters Headlines

**Wesoky to Head New Environmental Post.** The FAA announced on October 27 that Howard L. Wesoky will be the agency's first chief scientific and technical advisor for environment in the Office of Environment and Energy. In this position, he will serve as the agency's technical expert for planing and execution of environmental research and its application to the development of noise and emissions standards. He will advise the agency on environmental matters as they relate to aircraft operations, including noise, sonic boom, and engine emissions. Before joining the FAA, Wesoky spent 34 years at NASA, most recently as team leader for environmental compatibility assessment in the Office of Aerospace Technology.

**New Test Specification for Insulation.** On October 14 Administrator Garvey announced that within six months the agency will develop a new test specification for insulation that will result in increased fire safety on aircraft. In addition to developing the new standard for testing insulation, the FAA will require that existing materials be replaced with insulation that can pass the new test. The new regulation will accept, or "grandfather," any aircraft already retrofitted with fiberglass or Curlon wrapped in polyimide film.

**Sullivan New Assistant Administrator for Government and Industry Affairs.** On October 13 Administrator Garvey announced the appointment of Suzanne Sullivan as Assistant Administrator for Government and Industry Affairs (AGI-1). Sullivan succeeds A. Bradley Mims who now serves as deputy assistant secretary for aviation and international affairs at the Department of Transportation (DOT). A native Washingtonian, Sullivan joined the FAA from DOT where she was deputy chief of staff for Secretary Rodney E. Slater. She was also special assistant to Deputy Secretary Mortimer L.

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Downey. During her tenure at DOT, she worked on all aspects of the department's business including aviation issues.

**New Partnership Agreement with NASA.** Building on the long-standing relationship between their two agencies, on October 9 FAA Administrator Jane F. Garvey and NASA Administrator Daniel S. Goldin signed an agreement at NASA's Lewis Research Center in Cleveland, Ohio, that establishes a new partnership to achieve goals in aviation and future space transportation. These goals include aviation safety, airspace system efficiency, and environmental compatibility. To facilitate this partnership, the agencies will coordinate their planning efforts through the FAA/NASA Executive Committee, and senior management will monitor the collaborative activities necessary to accomplish these goals.

**Plan To Enhance Safety of Aging Aircraft Systems.** On October 1 Secretary of Transportation Rodney E. Slater and Administrator Garvey announced a multi-year effort -- which includes both short- and long-term initiatives -- to address the safety and reliability of systems on commercial aircraft. The FAA's Aging Transport Non-Structural Systems Plan responds to a recommendation by the White House Commission on Aviation Safety and Security chaired by Vice President Gore. In announcing the plan, Garvey said "our aging structures program is successful because of the joint commitment of the government and the aviation industry. This aging systems plan opens a new era of aviation safety and ensures we are identifying and addressing potential safety risks."

**350<sup>th</sup> ASOS Commissioned.** On September 30 the FAA reached a major milestone in its automated weather observing program with the commissioning of the 350th Automated Surface Observing System (ASOS) -- three months ahead of schedule. The ASOS monitors weather conditions at airports, including sky conditions, visibility and precipitation, and reports that information to pilots using a computer-generated voice. The most recently installed systems also provide the intensity of rain, snow, freezing rain, and obstructions to visibility such as fog and haze.

**McSweeney Named Associate Administrator for Regulation and Certification.** On September 28 Administrator Garvey announced the selection of Thomas McSweeney as the new Associate Administrator for Regulation and Certification, replacing Guy Gardner. Previously, McSweeney served as director of the FAA's Aircraft Certification Service where he oversaw the airworthiness and safety of all U.S. commercial aircraft design and production. As AVR-1, he will be responsible for the certification, production approval, and continued airworthiness of aircraft; certification of pilots, mechanics, and others in safety-related positions; certification of all operational and maintenance enterprises in domestic civil aviation; development of regulations; civil flight operations; and the certification and safety oversight of some 7,300 U.S. commercial airlines and air operators. He will oversee a work force of approximately 4,300 employees in the FAA's Washington Headquarters, nine regional offices, and over 125 field offices throughout the world. The FAA's annual regulation and certification budget is over \$500 million.

## **FAA National Satellite Testbed Completes Joint Flight Tests in Iceland**

The National Satellite Testbed (NSTB), a prototype version of the Wide Area Augmentation System (WAAS), completed successful tests as part of the North Atlantic Region Space Based Augmentation System Flight Demonstrations. These demonstrations, conducted in Iceland, October 12th – 15th, included aircraft from the FAA (B-727), the United Kingdom (BAC 1-11), and Iceland (Beechcraft King Air). These aircraft completed Category I quality approaches to Keflavik airport using the prototype WAAS signals as guidance. On the last day of the flights, many of the 80 international visitors flew on the aircraft to observe the testing.

The basic concept of the WAAS, as demonstrated by the NSTB, is that GPS signals (which are already approved for aircraft en-route and oceanic navigation) can be monitored and augmented to improve the accuracy, availability, and integrity. With WAAS, the accuracy of the “civilian” GPS is 100 meters vertical (95% of the time). When WAAS provides corrections to the GPS signals, accuracy improves tenfold to less than 7.6 meters, 95% of the time. WAAS also provides instantaneous information on satellite malfunctions and then adjusts the computations to use only ‘good’ satellite position data.

The ground- and space-based assets used in these tests included both the mature U.S. NSTB and the UK’s more recent Northern Europe Satellite Testbed (NESTBED). The NSTB has 29 reference stations, 18 of which are located in FAA facilities throughout the continental United States, 3 in Southern Canada, 2 in Hawaii, and 5 in Alaska. In late 1997 a reference station in Reykjavik was added. All NSTB reference stations send GPS measurement data to the NSTB Master Station at the FAA Technical Center. The Master Station then generates the GPS correction data and sends the correction messages to a Ground Earth Station (GES) in Southbury, CT. The GES then beams the signal through the INMARSAT Atlantic Ocean Region-West Geosynchronous (GEO) satellite (AOR-W).

The NESTBED currently has 5 reference stations connected to the UK Master Station. Their Master Station also computes GPS correction messages, sends them to an uplink site in Goonhilly, UK, which then beams the correction messages through a different GEO satellite. The coverage of the GEO satellites overlaps in the Atlantic Ocean. This demo was the first true international test of the WAAS concept using two testbeds which are composed of different hardware and different software, but are designed to deliver corrections as defined by the RTCA and ICAO.

Researchers made the first observations of the simultaneous performance of both systems aboard the FAA B-727, configured with two prototype WAAS receivers, one tracking the NSTB signal and the other tracking the NESTBED signal. The tests left all witnesses impressed by the demonstrated global scale of accuracy, redundancy, and safety. Detailed data reduction and analysis is currently under way.

The international visitors (mostly from Iceland and Europe) also viewed real-time ground displays of aircraft position on CAT-I glidepath with superimposed error bounds. An Iceland TV crew set up at the far end of the runway, and projected a TV image in the terminal demo area side-by-side with the data display. All approaches showed, live, how well the systems performed. Researchers also used ground displays to demonstrate graphically the real-time accuracy of the NSTB signal.

With these successful tests, the FAA and its research partners not only achieved an important first - the simultaneous operation of two separate “WAASs” to provide CAT-I guidance, but also collected valuable data which will steer future investigation on interoperability issues and ionospheric modeling algorithms. Also of equal importance was the opportunity to work with the international community and to demonstrate in a convincing way that WAAS can work globally.

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The FAA team that made this flawless demonstration possible included the B-727 Crew, Keith Biehl, Larry VanHoy, John Tatham, John Birney, and Joe Campbell; FAA Headquarters personnel Barbara Lingberg,

The FAA Flight Crew



MaryAnn Davis, and Leah Moebius; the Tech Center's NSTB group, Tom Dehel, Steve Kalinowski, Frank Persello, and Luci Holemans; as well as those who stayed behind, working hard to prepare display and data analysis software and keep the NSTB running, Geff Geffard, Joan Grellis, Joe Sheftic, Kristy Pham, David Nelthropp, Khanh Vu, Landon Kelsey, and Chris Raab.

The next significant international effort for the NSTB is to include a network of reference stations being installed by Chile as the first step to bring South America into the WAAS family. Flight testing in Chile is expected to begin this December.

## Ted Grant Named Engineer of The Year

Ted Grant from Galaxy Scientific Corporation, an ACT contractor, received the "Engineer of The Year Award" for 1998. The award is presented each year by the South Jersey Chapters of the Institute of Electrical Electronics Engineers (IEEE), American Institute of Aeronautics and Astronautics (AIAA), and the South Jersey Computer Society in recognition of exceptional engineering talent in the South Jersey area.

Grant earned the award by designing a highly sophisticated, low cost radio-frequency (RF) communications system that supports the aviation industry. He led a team of engineers and software programmers to create a commercial product marketed by Galaxy Scientific Corporation as the Driver's Enhanced Vision System (DEVS) and a Vehicle Location and Tracking System (VLATS).

The Driver's Enhanced Vision System (DEVS) helps airport emergency crews navigate through poor visibility conditions. Initially deployed at Boston's Logan International Airport in September 1996, it is now being installed at airports across the country, including Los Angeles and St. Louis. The DEVS received Aviation Week and Space Technology's Technology Innovation Award last April. This success story began with R&D dollars invested by the Tech Center to explore new ways of enhancing airport safety. In his acceptance speech, Grant talked about how seed money from the Center has been turned by Galaxy Scientific into products helping the world. His thoughts provided rationale why contracting out services is a good idea and how this money fosters new opportunities and products.

Ted Grant lives in Absecon, NJ, with his wife Francisca, son Calvin, and daughter Celeste.

## Tech Center Innovates for Minimum Performance Standards

The FAA has long been experimenting with new ways to protect airline passengers and cargo. The large amount of public attention to the subject of cargo hold fires in the wake of the ValuJet accident shines new light on this ongoing research. One of the greatest hazards in aircraft cargo holds comes from a seemingly benign source - aerosol cans. The fireball generated by an exploding can of hairspray can be 8 to 10 feet in diameter and produce catastrophic structural damage to the aircraft. The explosive potential of aerosol cans lies in the hydrocarbon propellants used to expel the ingredients from the can.

FAA engineers investigating this hazard needed to create a test scenario that was both representative and repeatable to establish a minimum performance standard for evaluating fire fighting agents and systems that will eventually replace gaseous Halon, which has been found to deplete stratospheric ozone. Since

aerosol can explosions are extremely variable and unpredictable, there are a wide range of possible results when using actual cans in research. Fire safety engineers came upon the idea of creating an aerosol can simulator that could deliver consistent, repeatable results.

With the Montreal Protocol treaty's banning of the use of ozone-depleting Halon for aircraft firefighting, researchers are scrambling to devise standardized test scenarios for evaluating new environmentally friendly agents and systems. To date, FAA Technical Center engineers have developed four test conditions for researching the effectiveness of replacement agents to be used in the aircraft cargo compartments- surface burning, simulated bulk loaded and containerized luggage, and exploding aerosol cans. The importance of consistency in the conduct of this research cannot be over-emphasized as the data collected will drive

regulations that have a large economic impact on the airlines. The development of the aerosol can simulator is a good example of the approach FAA engineers take in this very serious research.

The initial simulator design utilized a steel pipe pressure vessel mated to a high rate discharge (HRD) electrically actuated solenoid valve. The vessel contained ports and valves to allow for the transfer of base product (initially isopropyl alcohol), and hydrocarbon propellant (typically propane). Researchers heated the contents by blowing a hot air gun against the surface of the steel vessel, effectively raising the pressure. When the pressure was sufficient to burst a standard can, approximately 210 pounds per square inch, the contents were released over a set of direct current (D.C.) spark igniters.

Although the simulator used a mix of constituents representative of a large hairspray can, the explosion event is much more severe. A major reason for the consistent potency of the simulator lies in its ability to form a large, combustible vapor cloud, promoting complete combustion. Further refinement of the simulator is currently underway. At present, large aerosol cans are being overpressurized under a variety of conditions in an attempt to cause the most violent explosion. These tests are being conducted in a large pressure vessel outfitted with high-speed pressure transducers to measure the pressure rise.

This data will be used to adjust the output of the simulator, so that a severe, but realistic, MPS test condition can be achieved. Halon replacement agents, most notably water spray, will be tested to determine

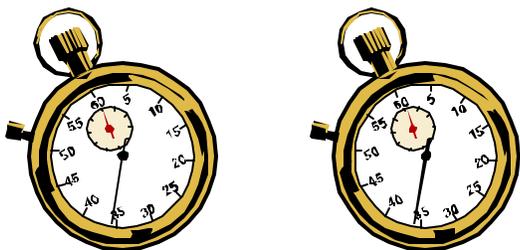
Setting up the test





Testing Underway

their effectiveness against the standard exploding aerosol can fire threat. For additional information, contact Timothy R. Marker( AAR-422) at (609) 485-6469.



## The Clock is Ticking – Understanding Y2K

At 12:01 a.m. on January 1, 2000, many computer systems worldwide could malfunction or produce incorrect information because of a simple date change anomaly. The Year 2000 or Y2K problem, as it is called, results from the way computer systems store and manipulate dates.

According to the FAA's Year 2000 program office, dates are often used as part of a computer-based system's algorithm or decision process. For efficiency and to economize storage space, most computer manufacturers and computer program designers omitted the first two digits of the year (i.e.,

the century) when they referred to dates in computer programs. Therefore, when the date rolls over from 1999 (99) to 2000 (00), many computer programs will fail to recognize the change in the century and misread "00" (the year 2000) as 1900 instead.

Although the Y2K issue is not a difficult technical problem to solve, it requires a major coordination effort throughout the agency, because of the large number of computer systems, languages, and platforms the FAA uses. Many of the FAA's mission critical systems, such as the majority of those that comprise the National Airspace System (NAS), may be affected by Year 2000, and require modification to become Year 2000 compliant. Fortunately, those changes are well underway and many systems have already been certified compliant.

ACT-200 is key to making sure many FAA systems are compliant by conducting end-to-end testing (ETE) to ensure that NAS systems, when connected across multiple domains, continue to perform their operational baseline requirements before, during, and after the date/year change. NAS Level ETE Testing identifies potential problems when integrating NAS Systems and provide systems owners with sufficient time to correct problems with interfaces, prior to the Year 2000 crossover.

Testing is organized into three categories: system integrity testing; operational demonstration; and field site tests. These tests are being conducted under a configuration that interfaces systems and components located at the Tech Center, Mike Monroney Aeronautical Center, MCI Test Facilities, ARINC System Test Bed, Airline Operations, National Weather Service, and Department of Defense test facilities. A limited live test of NAS components and systems will be conducted in the Denver, CO, area.

Administrator Garvey recently applauded FAA's Y2K work, including that of ACT-200, at the Y2K Industry Day held at the Tech Center. "We in aviation have a critical responsibility. . . This could be the most important assignment in our careers . . . I want you to know I appreciate the work you are doing and the constructive way you are working together."

## Behind the Scenes ATCA '98



Manning the Airport Safety Display

On November 1-5, the Air Traffic Control Association (ATCA) held its 43rd annual convention at the Taj Mahal Casino Resort Hotel in Atlantic City, NJ. At the convention, leaders of U.S. and international aviation organizations, airlines, military, airports, government, and ATC industries met to discuss vital issues affecting the future of the world's air traffic control systems. The three days of technical sessions focused on worldwide, significant programs and issues, while the industry exhibits covered all aspects of activities, progress, and capabilities in ATC and related products.

The convention's global participation, its Atlantic City location, and theme, "Facing the Challenges of FANS CNS/ATM

Implementation," provided an excellent opportunity for the Tech Center community to highlight its laboratories, research, and personnel. To take full advantage of the opportunity, ACT employees began work months before the



Anne Harlan answers questions during the luncheon

convention opened to ensure they were ready to tell the world about the good work being done at the Center.

When the convention opened, the FAA and Center was ready with 16 continuous displays highlighting the agency's safety, security, and system efficiency

goals. The exhibit's theme, "Gate to Gate, We Are With You All the Way," displayed FAA programs and projects from takeoff to landing. A corresponding video, produced by ACT-70, showed a family flying from Miami International Airport to Atlantic City International Airport. The video showed each FAA/Technical Center project as the flight progressed through each segment -- Airport, Taxi/Takeoff, Enroute, and Landing.



The Partnership Booth



Showing the work of th Traffic Flow Management Laboratory

## A Job Well Done!



How does your organization recognize the good work of employees? *Intercom* is looking for stories on new and unique ways of telling employees they are doing a great job.

Fred Snyder, Deputy Director of the Office of Research and Technology Applications (AAR-201) has created an interesting way to show his staff that they have gone above and beyond all expectations.

When someone in AAR-201 makes that extra effort, Fred gives them a sign of appreciation, letting the whole office know something special has happened. "It's nice to know that Fred realizes that we are working hard on behalf of the

organization," explained Colleen Peranteau, the recipient of the first award. "We take pride in our work, and it's nice to know that someone has noticed."

If your office has an interesting way to recognize employees, please let us know so we can feature you in an upcoming edition of *Intercom*.



## Taking research On the Road



Tech Center employees are well known in the aviation research and development community for their expertise and innovative ways of making aviation safer and more secure. Often ACT employees take their ideas and message on the road, sharing research ideas and new programs with the aviation community.

*Intercom* wants to know who you've been talking to and where you've gone to share your ideas and present research results.

For example, this past September Pat Lewis (ACT-1C) and Richard Van Suetendael (ACT-250) made presentations as part of a panel chaired by Herman Rediess (AAR-1) at the 1998 International Test and Evaluation Association's annual meeting in Albuquerque, NM. At that conference, Pat discussed "*Test and Evaluation of COTS-Based Systems in FAA*," and Rich talked about "*Developing Complex Air Traffic Management Decision Support Tools in and Operational Environment*." Both presentations were well received by the audience, which now has a better understanding of what FAA's Technical Center and some of its researchers are doing.

If you'd like to *Intercom* to highlight your activities, please contact Terry Kraus.

## Get Your Voice Heard

If you would like to submit articles, ideas, and information to *Intercom*, you can contact Terry Kraus directly or you can work through your organizational POC. If your organization does not yet have a POC, please contact Terry Kraus with a name and phone number.

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Kimberly Tweedle	ACT-9
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George DeLuca	ACT-200
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