

# The GTRI Connector

## Secrets to success

- Be happy. It's one way of being wise.  
— Colette
- To exist is to change; to change is to mature; to mature is to create oneself endlessly.  
— Henri Bergson
- The truth knocks on the door and you say, "Go away, I'm looking for the truth . . ."  
— Robert Pirsig

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## Inventory of GTRI State Property Almost Complete

By Lea McLees, RCO

A 100 percent inventory of an estimated \$120 million in state property used at GTRI is almost finished after less than three months, thanks to quick responses from Research Property Management (RPM) and other GTRI employees.

The search has taken half the time the previous inventory required four years ago, said RPM Manager Harry Ross.

"The previous search was the first one we'd done, and so of course it went slowly," he said. "This time we are using what we learned then, and we've gotten great cooperation from the top to the bottom of GTRI."

The inventory, requested by GTRI Director Admiral Richard Truly and Executive Associate Director Bob Shackelford around the first of the year, had to be completed within a relatively short time frame to correct deficiencies that surfaced during the last state audit.

RPM began its effort in late January by delivering a memorandum from Truly to occupants of each room in every GTRI lab and office. It included instructions on conducting the inventory. Attached to the memo was a printout of the known inventory for that particular room.

Each memo recipient then noted whether the equipment on the list was present, and if it was not, where it might be; added additional equipment worth more than \$1,000 to the list; and corrected errors in equipment descriptions, serial numbers and model numbers. Programmer Angela DuBose (RPM) processed information on

*Continued on page 2*



Harry Ross, seated, Brenda Hill, left, and Angela DuBose, right, display the inventory sheets they've processed. Paul Hawley, center, stopped by to update them on his search for missing equipment. (Photo by Lea McLees)

## Task Forces Examining Organization Options

Admiral Richard Truly, director of GTRI, has appointed two task forces to study alternative ways of organizing GTRI that would increase its efficiency, agility and effectiveness.

"I believe this task to be critically essential to the future excellence and viability of GTRI as a major research institute," Truly said.

One task force, led by Executive Associate Director Bob Shackelford (OOD), will examine new organizational options for the Office of the Director. They also will examine executive and associated staff functions and service departments. The second group, led by Associate Director Ed Reedy (OOD), will look at the GTRI laboratories' and units' structures.

In an April 8 memo, Truly encouraged the 12 employees who are serving in the groups to seek input from a variety of sources and prepare options for his consideration by May 10. He would like to be able to make and implement any decisions on restructuring before FY 94.

Those serving on the OOD task force with Shackelford are Lab Director Larry Holland (ESML); Associate Director Pat O'Hare (OOD); Group Manager Carolyn Mahaffey (MAPS); Reedy; and Director of Program Development Don Wilmot (OOD).

The other task force includes Reedy, Lab Group Director Charles Brown (OOD); Lab Director Randy Case, (CSIT); Chief Scientist Devon Crowe, (OOD); Senior Research Engineer Dr. Kathryn Logan (OIP, MSTL); and Shackelford.

All GTRI personnel are asked to share suggestions with task force members as soon as possible.

## Observed & Noted

A conference on commercial applications and dual-use technology in the tele systems field is being co-sponsored by Georgia Tech and held in Atlanta. *Read about this June event on page 2.*

GTRI has been a pioneer in efforts to test the performance of cardiac pacemak-

ers and ensure that they work safely in a variety of environments. *The story is on page 3.*

Dr. Rosemary Szostak, a GTRI zeolites specialist, traveled to Oslo, Norway on a research fellowship this past fall and winter. *See page 4 to learn more about*

*this memorable experience.*

Retired GTRI Director Dr. Donald J. Grace was honored on the occasion of his retirement by Georgia Tech President Dr. John P. Crecine. *A photograph of the event appears on page 5.*

Georgia Tech stu-

dent Butch Porter received valuable professional experience and a variety of contacts through his work as a co-op at GTRI's Albany office. *This story can be found on page 5.*

GTRI's annual Spring Fling picnic will have some exciting new features

on May 19. *Read about them on page 6.*

A circuit simulator developed at GTRI has non-electronic applications that can be used through a no-cost licensing arrangement. *To read about this technology, turn to page 6.*

Finally, the back page features a photo of "Miss Kitty," a gray cat that has performed mouse-catching duties at Area 2's Supply Services warehouse for the past five years and that has also supplied four kittens for GTRI employees' homes.



**News  
&  
Notes**

*Lt. Gov. Pierre Howard, center, presents a Senate Resolution declaring February 9 as Engineer's Day in Georgia to John J. Mills, left of center. Mills is Director of EDL's Columbus Regional Office and President of the Georgia Society of Professional Engineers (GSPE). To Mills' left is Sen. Jim Tysinger, a Georgia Tech graduate and one of the few engineers in the Georgia Legislature. Also present were Don Hill right of center, President of the Consulting Engineers Council of Georgia, and John Prien, far right, Chairman of the GSPE Legislative Affairs Committee. (Photo courtesy John Mills)*



**June Conference to Focus on Dual-Use Technology**

By Mark Hodges, RCO

With the end of the Cold War and a new focus on national competitiveness, commercial applications and dual-use technologies have taken on critical importance in the electronics, aerospace, research, and telecommunications/information systems communities.

Professionals in these fields can learn more about this trend at the National Telesystems Conference (NTC '93) in Atlanta on June 16 and 17. The theme is "Telesystems in Transition: Commercial Applications and Dual-Use Technology," and the conference is co-sponsored by Georgia Tech.

"We are at the threshold of an era in which new approaches will be applied to maintaining and in some cases restoring U.S. competitiveness in technology," said Eric Barnhart, general chairman of NTC '93 and director of COML. "The goal of NTC '93 is to focus on these new approaches which involve new partnering arrangements between industry, government and universities, and to closely examine more than a dozen technical arenas which are likely to provide a basis for U.S. success in technology over the next decade. These include topics like wireless communications, multimedia, Intelligent Vehicle Highway Systems, advanced sensor signal processing, space navigation and GPS, enhanced vision systems and others."

The two-day conference will convene at the World Congress Center. NTC '93 is of interest to applications and systems professionals because of the strong interest by federal research sponsors in funding programs that promote dual-use technology.

The plenary session on the first day will focus on emerging strategic partnerships for R&D and technology development in disciplines that would enhance the competitiveness of U.S. industry and build dual-use and commercial opportunity.

Technical sessions focusing on the confer-

ence theme include such wide-ranging topics as those mentioned above by Barnhart. Others include personal communications systems, data/video/audio compression, remote sensing, telemetry, radar, and aircraft navigation and flight safety.

The highlights of the second day will be a special focus session on multimedia technology and a panel focusing on "Technology Transfer Processes and Initiatives." The panel discussion will focus on the specific initiatives which underpin the strategic partnerships addressed in the plenary session in commercial and dual-use technology. These initiatives have emerged as the cornerstones of the Clinton administration's technology programs and will have a profound impact on federal R&D funding.

NTC '93 is sponsored by the IEEE Atlanta Section, Aerospace and Electronics Systems Society, the IEEE National Capital Area Council, and the Georgia Institute of Technology. To obtain additional information about the conference or a registration form, contact NTC '93 Registration Chairman Dan Howard, GTRI/COML, Mail Code 0800 (Telephone: 404/894-3541 or Fax: 404/894-3906).

**Facilities Management Announces Changes**

GTRI employees are noticing familiar faces in new places since the Facilities Management Department (FMD) rotated its assistant managers during the first part of April. Carl Baxter is now at the Centennial Research Building; Harry Vann is at the Cobb County Research Facility; and Rusty Embry is at the Electronics Research Building/O'Keefe. Embry will handle telephone needs and Baxter will handle copy machine requests.

The managers rotate so they can become familiar with all GTRI's physical assets and the actions necessary to ensure that they function properly, Baxter said. GTRI employees are encouraged to call the appropriate manager to discuss any facilities needs.

**Purchasing Deadlines Announced**

The following deadlines apply to all purchases for FY 93 using state or sponsor funds. Please contact Supply Services at 894-3440 for further details or answers to your purchasing questions.

**May 4** Orders over \$7,500 for: 1) Electronic data processing (EDP) equipment, software, peripherals not under statewide contract (attach EDP approval if required), 2) non-technical/non-scientific items, or 3) items not under state or institute contract.

**May 20** Orders under \$7,500 for: 1) EDP equipment, software, or peripherals not under statewide contract (attach EDP approval if required), 2) non-technical/non-scientific items or items not under state or institute contract, or 3) technical or scientific supplies or equipment, regardless of monetary value.

**June 15** Orders for items on state or institute contract, regardless of monetary value (EDP equipment, software, or peripherals must have EDP approvals attached).

**June 16** All orders under \$300.

**Inventory From page 1**

5,806 pieces of equipment recorded by inventory participants. She sent copies of corrected lists, along with a letter of appreciation, to those who did the inventorying.

In the meantime, Administrative Supervisor Brenda Hill (FMD) compared the corrected versions with lists of missing equipment, write-off equipment (missing items that have never been found), and salvage equipment (items that either quit working or became obsolete and were stored). She already has located some equipment presumed missing.

"My next step will be to compare our original list of missing equipment against our new, final list to see if we've improved our status," Hill said, noting that she hopes the updated list will be shorter. As the updated list is completed, Chemical Technician Paul Hawley (MSTL) is taking to the halls of GTRI, using his familiarity with technical equipment to search for any items on the missing list.

The inventory will be maintained on a regular basis, Ross said. Property coordinators will be sent inventory lists to update once a year. They also may record any changes in equipment or equipment locations as they happen via an ORACLE database. RPM will review such changes weekly.

RPM has participated in the inventory while continuing to carry out its primary responsibility, which is keeping track of the \$80 million in property used on sponsored research projects. Ross credits RPM Property Control Coordinators Bert Watkins and Sandra Kirchoffer and Senior Secretary Mary Henderson for taking on extra responsibilities while he, Hill, DuBose and Hawley completed the state inventory. He is pleased with the work of Hill, DuBose and the recipients of the inventory printouts.

"I only orchestrated it," he said. "They did the down-in-the-trenches work."

Hill also commended the inventory participants on a job well done.

"There is no easy way to do this," she said. "I think we had a good response. People at GTRI made an honest effort to make things better. We want to thank everyone who helped us."



## Pacemaker Testing Helps Hearts Keep Beating Life

By Lea McLees, RCO

Today's pacemaker wearers think nothing of keeping an eye on popcorn while it cooks in their microwave ovens. They don't have to plan daily activities or summer vacations to avoid sites where certain types of radars are operating.

But that wasn't always the case. Early pacemakers were sometimes susceptible to electromagnetic energy from equipment such as microwave ovens and radars. Contact with such energy could have exposed wearers to the possibility of cardiac arrest.

Among researchers nationwide who have helped manufacturers find the causes of and cures for these problems is Senior Research Engineer B. M. Jenkins (EEEL). He has tested more than 1,200 domestic and foreign pacemakers since 1969.

"It is the requirement for high sensitivity that contributes to the pacemaker's vulnerability to interference," Jenkins said. "The pacemaker has to sense the heartbeat — and the heartbeat is a very small signal."

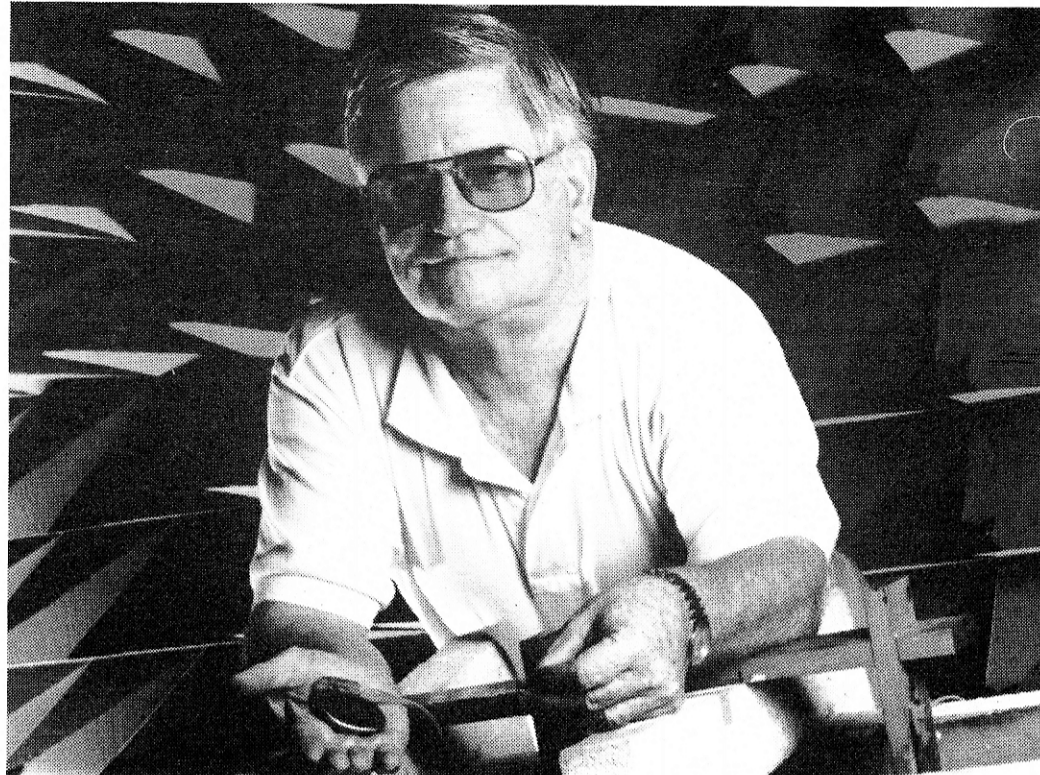
Pacemakers enable damaged hearts to pump blood by providing a proper electrical stimulus. The first devices were implanted around 1960. Concern about interference to pacemakers and unexplained stoppages grew about 10 years later. The stoppages seemed to be linked with proximity to microwave ovens — pacemakers were picking up electromagnetic energy created by the ovens and could not distinguish it from that of a heartbeat. The interference falsely signalled pacemakers that hearts were beating regularly, causing pacemakers to cut off.

The military also became concerned about the effects its radar/communications systems might have on the devices, Jenkins said.

"In 1969 we were doing evaluations on those systems," he said. "We built some radar simulators and were testing entertainment equipment — the sponsors of this research program were interested in the possible effects these radars would have on people's televisions and stereos. Therefore, they requested we run some tests on pacemakers using the simulators."

Jenkins and other GTRI researchers made important contributions to the development of the current standardized testing methodology required by the U.S. Food and Drug Administration (FDA). The test method consists of exposing a pacemaker to radiated fields or conducted currents while immersed in a 0.03 Molar saline solution. This solution has electrical characteristics similar to those of body tissues and fluids. Researchers apply interfering signals and track pacemaker pulse amplitude, width and rate using bronze screen electrodes submerged in the solution and connected to monitoring equipment. The testing is done in a metal room lined with large pyramids of black foam that absorb electromagnetic fields.

The researchers run numerous tests on pacemakers. One such test involves evaluating the effects of radar frequency signals at 450 megahertz as well as signals from other electromagnetic sources, Jenkins said. GTRI test data were among that which served as a basis for the FDA's requirement that pace-



makers withstand a 200 volt-per-meter field at 450 megahertz.

The test data, usually collected on five to 12 prototypes of a pacemaker, are sent to the manufacturer, who eventually must present data to the FDA confirming that the company's pacemakers meet FDA standards.

Among the pacemaker improvements that resulted from such testing — and thus freed pacemaker wearers to live normal lives — are the addition of shielding and filtering to the devices, Jenkins said.

"Early pacemakers were encapsulated in epoxy, so they were not shielded from interfering signals," he said. "The manufacturers

started enclosing the devices in stainless steel or titanium cases, because these materials reduce interfering signals and are bio-compatible with the body. They won't rust."

"Modern pacemakers also are outfitted with filters that distinguish between interfering signals (noise) and normal heartbeat signals," Jenkins said. "These filters minimize the amount of interfering signals that get into the pacemaker's electronic circuitry."

Jenkins credits pacemaker manufacturers with the real work that has gone into improving the devices. "We've identified the problems and they've done the improvements," he said.

*B.M. "Red" Jenkins (EEEL) has tested more than 1,200 domestic and foreign pacemakers since 1969. He's shown here with a pacemaker in the anechoic chamber where the devices are tested. (Photo by Margaret Barrett)*

## In Brief

### Investing in the Future

Students at High Meadows Elementary School in Roswell got a glimpse of outer space when Jim Sowell and Jim Beletic (EOPSL) visited on March 4. The two brought actual moon rock samples that Sowell obtained from NASA.

### New GTRI Brochure Available

"Research for the '90s," a new eight-panel flier, is now available from the Research Communications Office (RCO). This brochure describes the missions and charter of GTRI; staff size; location of offices, laboratories and facilities; organizational structure; areas of research capabilities; and tells where to get additional information. Research areas are grouped into Advanced Concepts, Computer Applications, Economic Development, Electronic Systems and Components, Environmental Sciences, Materials Science, and Sensor Technologies categories. You may request the brochure by calling RCO at 894-3444, or sending an e-mail note to lee.hughey@gtri.gatech.edu, or to d.senn@gtri.gatech.edu.

### WGNX Series Taped

GTRI was featured prominently in a series on defense conversion aired by WGNX-Channel 46 News at Ten. The three four-minute installments ran in early February. The first segment on February 2 spotlighted industry efforts to convert defense technologies to peacetime uses, in order to make the United States more competitive. GTRI Associate Director Gerald Carey (OOD) was interviewed for that segment. Part two on February 3 was devoted

largely to Lockheed, which is continuing its defense program. The final segment on February 4 showed how GTRI is applying defense-related technologies to solving problems in the civilian sector. GTRI representatives interviewed for this segment included Carey, Dr. Kathryn Logan (MSTL), and John Gilmore (CSIT). To view this series, call the Research Communications Office (RCO) at 894-3444.

### Tech, UGA Benefit from Joint Fund

The Joint Tech-Georgia Development Fund has raised more than \$18 million in the state's business community for Georgia Tech and the University of Georgia since 1956. The monies, divided evenly between the two schools, are contributed as unrestricted funds and can be used wherever the schools need them most. For more information on the Joint Fund, call 894-3409.

### Check This Mailing Address

Richard Stanley of GTRI's Huntsville Research Laboratory is experiencing delays in receiving mail from campus contacts. It seems that some campus offices have an address for the Huntsville office that is several years old. Here are the correct addresses:

#### U.S. Mail

Mr. Richard P. Stanley, Director  
Huntsville Research Laboratory  
GTRI  
P.O. Box 9162  
Huntsville, AL 35812-0162

#### Federal Express/Courier Address

Bldg. 5400, Rm. C-230  
(Phone 205-876-1301)  
Redstone Arsenal, AL 35898



**Profile  
&  
Insight**

**Bob Zimmer, left, and Bob Mobley (OOD) attended the Dixie Crow Club of the Association of Old Crows' annual symposium March 21 through 25 at Warner Robins Air Force Base. The theme of the symposium was "Electronic Warfare Technology for the 21st Century." They are shown in front of GTRI's exhibit at the meeting, which highlighted recent research activities and was staffed by Joe Brooks and other ESML personnel.**



**Norway: The Land of Snow, Reindeer—and Zeolite Research**

By Lea McLees, RCO

When Dr. Rosemarie Szostak stepped off a plane onto Norwegian soil November 1992 wearing tennis shoes and a winter coat, her hosts asked, "Is that all you brought?" "I told them I brought a pair of heels," she said.

Thus Szostak was introduced to Norwegian life — by being rushed to a store to buy heavy boots, wool socks, a hat and mittens, which she wore constantly for three months in zero-degree temperatures.

Szostak traveled to the University of Oslo on a fellowship awarded by the Norwegian Scientific Council. From November 23, 1992 through February 28, 1993, she was a role model for and supervised the research of three female graduate students, and collaborated with colleague Professor Karl Petter Lillerud on zeolite research.

The collaboration combined her knowledge of zeolite synthesis with Lillerud's theoretical skills. This combination allowed the two to decipher the structure of a new zeolite material, babelite, a unique structure that is chaotic in one direction while being ordered in the other. That project and others have resulted in one completed and one scheduled presentation to American Chemical Society meetings, an upcoming presentation to the British Zeolite Association, and 11 technical publications.

Szostak also brought back interesting observations about life in Norway. Though temperatures regularly hover around zero degrees Fahrenheit and the ground is always covered with one to two feet of snow in the winter, the Norwegians maintain that "there's no such thing as cold weather, only inappropriate dress," she recalled.

Norwegians get their children acclimated to the weather by exposing them to it as babies, she said. On one ten-below-zero day, she saw a line of buggies with babies in them parked outside a day care center. "The kids

are put outside for their naps so they'll get used to the cold," she explained.

People cross-country ski everywhere. And by virtue of its location — at the same latitude as Anchorage, Alaska — the city has only four hours of sunlight each day during the winter.

Dining was different, too, Szostak said. Staple foods include fish, crackers, meats — especially lamb — and lots of cheese. For Christmas dinner, Szostak ate tenderloin of reindeer. At one meal she tasted whale, which "looked like a steak, cut like a steak, and tasted like shrimp."

For Thanksgiving, however, she was invited to share U.S. traditions with her Norwegian friends. Several U.S. natives living in Oslo prepared a traditional turkey with all the trimmings.

Culturally, the country is different, as well. On Norwegian television, the Nobel Prize awards are televised with as much ceremony as the Academy Awards are in the United States, in a mixture of Norwegian and English. Women are well-represented in both academia and politics: 60 percent of graduate students and 50 percent of Parliament members are female. A famous Norwegian writer, Camilla Collett, is pictured on the 100 kr (krona) bill, the equivalent of our \$20 bill. In addition, one or both parents of each newborn child are required to take off a year from work with pay to care for the baby, she said.

Having thoroughly enjoyed her experiences and research, Szostak looks forward to continuing the Norwegian collaboration. She plans to return to Norway one summer and see more of the country, since during that season the country has only four hours of darkness each day. And, she'll be prepared this time with sweaters, hats and mittens for cold spells below the average summer temperature of 68 degrees.

**The GTRI Connector is published for Chemical Technician Paul Hawley (MSTL) and all GTRI employees who survived the "Blizzard of 1993." (Photo by Lea McLees)**



**Research  
in the news**

During January 1993, article placements about Georgia Tech research news appeared in publications with a combined circulation of more than 4.8 million readers. Selected highlights of those news placements follow, with circulation figures in parentheses:

*The New York Times* (2,120,000) reported on the work of Dr. Jan Gooch (MSTL) on new types of Aerospace Sealants.

The university research consortium known as the National Textile Center (NTC) — which includes Georgia Tech, Clemson, Auburn and North Carolina State University — gained attention in *The Birmingham News* (168,725) and *The Columbia State* (145,365). News about the NTC has now appeared in publications with a combined circulation of 868,000.

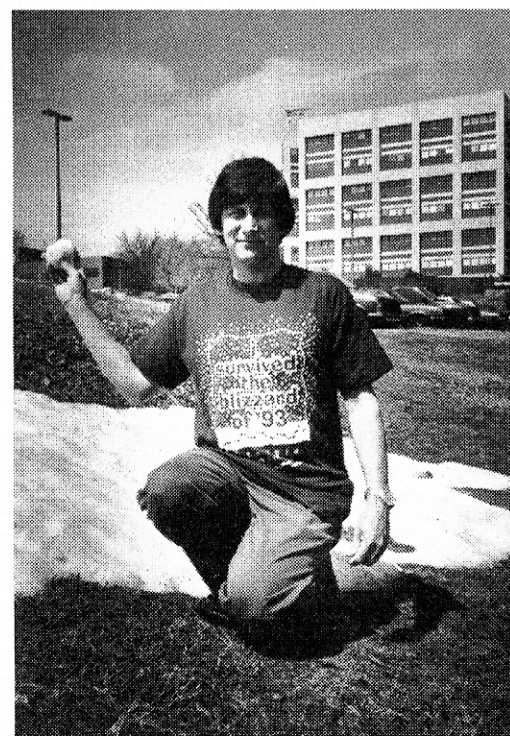
An Associated Press wire story on Defense Conversion quoted GTRI Director Richard Truly and mentioned two Georgia Tech military research projects which have found civilian applications. The article was published in the *San Jose Mercury-News* (280,918), *The Oakland Tribune* (137,279) and *Finance and Commerce*.

News of Admiral Richard Truly's appointment as director of GTRI appeared in *Microwave Journal* (56,000), *Microwaves and RF* (61,114) and *Business Atlanta* (35,575). The combined circulation of publications which have carried news of his appointment now totals 2.4 million.

*Optical Engineering* (30,000) described Dr. Rajarshi Roy's (Physics) work with a chaotic laser system.

*Presentation Products* (56,000) published a color photograph to accompany a feature article on the Multimedia Technology Laboratory. As a result of this publicity, the laboratory received a substantial equipment donation to help support its work.

*The Atlanta Journal-Constitution* (505,000) quoted Eric Barnhart of GTRI's Communication Laboratory in an article about cellular telephones.







President John P. Crecine, center, takes time from his March 29 staff meeting to recognize Dr. Donald Grace, left, who recently retired after 16 years with GTRI. Crecine presented Grace a plaque and a print of "Grey Morning at Tech" by Travers Green, TE '50, as GTRI Director Admiral Richard Truly campus administrators and GTRI employees looked on. Crecine credited Grace with being instrumental in helping Georgia Tech become a national research university. Said Grace: "I usually don't blurb, but I just did. I am very appreciative of the colleagues I've worked with over the years." (Photo by Gary Meek)

## Co-op Work in Albany Office Brings Student Wide Range of Contacts

By John Toon, RCO

When Butch Porter graduates from Georgia Tech this summer, he will have something few other students can boast: a long list of contacts at manufacturing companies, government agencies and schools in southwest Georgia.

A native of Thomasville, Porter has worked as a co-op student in GTRI's Albany Regional Office for 13 quarters. His responsibilities have included designing the layout of a manufacturing plant, developing community surveys, gathering technical information, running complex computer programs — and even meeting with high school students to talk about their careers.

"I think what I enjoy most is seeing the variety of manufacturing facilities, government organizations and businesses in the area," he said. "There are never two days in a row when I do the same thing. I can't imagine a more interesting job."

Porter figures he has received a broad general education in the real applications of what he has learned as an industrial management major.

"You see how what you are learning applies to the real world and what is really important about it — what to take seriously," he explained. "It gives you a good perspective."

After completing a detailed report on a feasibility study, for instance, he learned that the people reading it were really only interested in the "bottom line" recommendations — not his explanation of the research methods or his painstaking analysis of data.

Talking to government officials, information sources and even students has taught Porter important lessons about working with people, and about public speaking.

"Our work involves going to career days at schools and representing Georgia Tech, telling the students about the different kinds of engineering and the careers they can have," he explained. "I haven't always been big on public speaking, but I enjoyed telling the students about my experiences in college."

Porter has alternated co-op responsibilities in the Albany office with Scott Paros, an industrial engineering major.

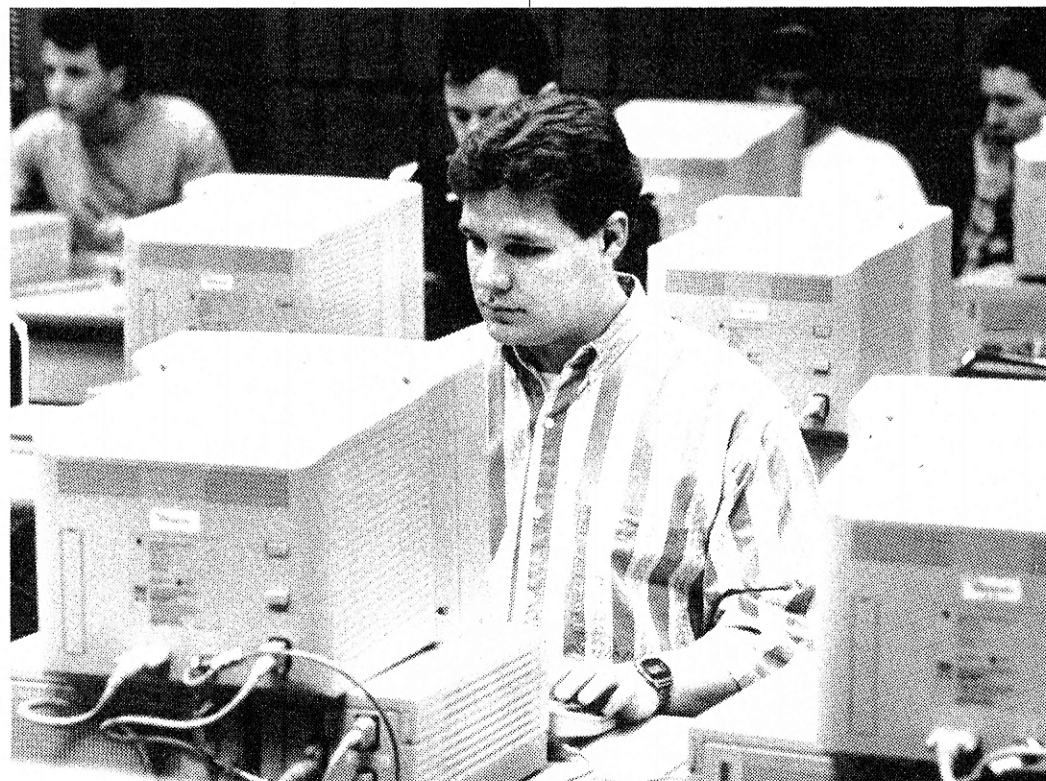
Ed Hardison, director of the Albany Office, has high praise for both students, who were able to assume some of the work load when the office lost one of its full-time professional engineers to budget cuts.

"Our co-op students have been able to step in and pick up the slack where we have needed help," he said. "Butch has helped us in all kinds of projects with manufacturing companies, wage surveys and computer work."

GTRI's regional offices have traditionally been places for engineers, so Porter initially felt a bit out of place. But now that he has been successful on the job, he believes he has been accepted into the engineering community.

"I think I can offer another perspective that the professional engineers don't have," he said. "They ask me for my opinion on quality or management issues. Being a management major hasn't had any down sides, and I think a lot of times it has had a positive side."

Porter believes the job experience will give him an important edge as he pursues his career: "The connections and experience all add up. There really are many benefits from a co-op job."



Industrial management major Butch Porter has done everything from designing the layout of a manufacturing plant to running complex computer programs while doing co-op work at GTRI's Albany Regional Office. (Photo by John Toon)

## EW Techniques Analysis Program Review Held

By Cheryl Barnett, OOD/EWT

The 15th Annual Electronic Warfare Techniques Analysis Program Review was held at the Georgia Tech Cobb County Research Facility March 30 to April 1. For the second year in a row, the review was combined with the Electronic Counter-Counter Measures Assessment Analysis Program Review. Both programs are sponsored by Wright Laboratory at Wright-Patterson Air Force Base in Dayton, Ohio. The three-day review was attended by 57 government personnel from all over the U.S.

Several activities were planned for attendees in conjunction with the review. A breakfast for visiting VIPs was held on Tuesday morning, March 30, with GTRI Director Admiral Richard Truly in attendance. Then Associate Director General Gerald Carey gave the keynote address during the first session of the review.

Truly spoke at a Tuesday night dinner at the Dobbins AFB Consolidated Club's lake house. On Wednesday night, March 31, attendees enjoyed a mixer/buffet at the Bradbury Suites and Inn. Georgia Tech's mascot, "Buzz," provided all the needed entertainment at the event.



**News  
&  
Notes**

**Circuit Simulator  
Has Non-Electronics  
Applications**

By John Toon, RCO

A software package for simulating circuits and higher-level electronic systems is being made available to users through a no-cost license. Known as XSPICE and developed here at GTRI, the program also can be used to simulate the operation of some non-electronic systems.

"XSPICE is unusual in that it provides very powerful analog simulation at the circuit card level as well as being useful for system-level simulation," explained Senior Research Scientist Fred L. Cox (CSIT). "It is especially appropriate when you want to mix system level simulation with analog simulation."

Introduced at the 1992 International Symposium on Circuits and Systems (ISCAS), XSPICE is an extended and enhanced version of the popular SPICE analog circuit simulation program developed at the University of California at Berkeley. The XSPICE software was developed to meet a U.S. Air Force need for simulating the operation of mixed digital-analog avionics equipment to aid development of test program sets.

XSPICE permits users to simulate analog, digital and even non-electronic designs from the circuit level through the system level in a single simulator.

"We can tie together the digital and the analog worlds as well as model arbitrary kinds of events," Cox said. "XSPICE integrates an event-driven simulation capability with the traditional SPICE analog simulator. This should be useful for a wide variety of applications."

A special code modeling feature allows users to add new models directly into the simulator for maximum simulation speed and accuracy. Code models are written in the C programming language, allowing arbitrarily complex behavior to be described. Code model development tools are provided along with a rich set of predefined code



**Students working with Krishan Abuja rate the annoyance of noises emitted from a large speaker (background) as a crew from the science program "Beyond 2000" shoots footage. The students and Research Engineer Ron Walterick worked with the Australian crew on March 19, helping them prepare a segment to air on the Discover Channel. At the end of the day the crew joined the students in eating Dr. Abuja's spicy Indian-style chili to celebrate the end of the quarter. (Photo by Anita Edwards)**

models, in addition to the standard discrete device models available in SPICE.

Cox expects the software will be helpful to electrical engineers in a wide range of applications, though it also has uses outside of electronics. Other potential applications include modeling dynamic systems such as processing facilities, hydraulic networks, and other phenomena that can be modeled with differential equations — or as event-driven systems. XSPICE is already being used to model the design and operation of wastewater treatment facilities.

Cox said distribution of the software through a no-cost license fulfills the Air Force's desire to transfer its technology into civilian applications that can have a positive economic impact. The extension of SPICE is

fully compatible with the original code, which has been distributed under the same type of no-cost license from the University of California at Berkeley.

XSPICE is currently available for UNIX workstations and is supplied in source code form. To date, the simulator has been successfully compiled and used on HP/Apollo and Sun workstations.

The XSPICE simulator and user's manual are available with a cost-free license arrangement from the Georgia Tech Research Corporation for a distribution charge of \$200, including first class postage within the United States. An additional \$25 is required for air delivery overseas.

For more information about licensing the product you may call 894-6287 or fax 894-9728. Interested parties may send e-mail to XSPICE@GTRI.GATECH.EDU to obtain copies of the order form and license agreement. Please include the word "LICENSE" in the subject header when mailing to the e-mail address.

**1993 Spring Fling Picnic  
Offers New Features**

Look for some exciting changes in food and fun at GTRI's May 19 picnic.

The menu will include baked chicken and barbecued pork with all the trimmings. Games, including some new ones that will test your skill and coordination, will be provided. Varieties of drinks will abound, along with snack foods such as popcorn, chips, ice cream and Popsicles. The entertainment will include something new, as well as the ever-popular "dunk tank."

Come prepared to have fun playing games, enjoying entertainment, and eating with your friends and co-workers.

REMEMBER: THE PICNIC IS 11 a.m. to 2 p.m. on MAY 19.



**Friends and co-workers of departing mail clerk Richard Turner, right, a familiar face and fixture at Georgia Tech for 16 years, honored him February 25. Assistant manager Harry Vann (FMD) presented Turner a mug and a plaque.**







## Focus on Folks

### Professional Activities

#### Aerospace Lab

**Robert Roglin** presented a paper entitled "Adaptive Airfoils for Helicopter Collective Control" at the Smart Structures and Materials Conference in Albuquerque (NM). He and **Sathya Hanagud** (School of Aerospace Engineering) were issued a patent entitled "Variable Camber Control of Airfoils."

#### Advanced Technology Development Center/Warner Robins

**David Chatham** graduated April 2 from the Economic Development Institute, Oklahoma State University. The three-year program included a thesis, "The Effects of Georgia Workers' Compensation Laws on Economic Development."

#### Economic Development Lab

In early April **Charles Estes** attended a conference of Trade Adjustment Assistance Centers in San Antonio (TX).

**Chuck Catlett** is the new president of the Association of Government Marketing Assistance Specialists.

In late April, **Elliot Price** gave a presentation at the American Economic Development Council meeting in Quebec City, Quebec. His topic was "The Sister Region Relationship Between the Central Savannah River Area and the Vasternorland Area of Sweden."

Georgia Tech held its 26th annual Basic Economic Development Course March 28 through April 2. More than 90 attended the course. Among the EDL staff contributing to its presentation were **Susan Shows** and **Rick Duke**.

#### Electronic Support Measures Lab

**Mark Foreman** and **Kathy Schlag** attended the Fuzzy Logic/International Joint Conference on Neural Networks in San Francisco March 29 through April 1.

#### Environmental Science & Technology Lab

**Paul Schlumper** served as a judge for the 1993 Georgia School Safety Poster Contest. He also conducted a half-day OSHA Seminar for the Valdosta (GA) chapter of the Society for Human Resource Management.

In early March, **Kirk Mahan** spoke to the Rockdale County Business and Health Care Employers Network, providing attendees with an overview of the Hazard Communication Standard and an update of current OSHA topics.

**Rae Adams** shot the cover photograph of the February 1993 issue of *Broiler Industry*. It showed a robotic packing work cell. Five of her photos and a graphic appear in the issue.

On March 20, **Claudia Huff** moderated "Technologies to Watch," a session at Currents '93, the annual conference of the Society for Technical Communication's Atlanta chapter.

In early February, **Nancy Davis** and **Leigh McElvaney** conducted a workshop, "I Gave Them the Solution to Their Problem; Why Aren't They Using It?," to the Biannual Research Review meeting of the South and Southwest Hazardous Substance Research Center.



"Miss Kitty," a gray feline with gold-green eyes, has performed mousing duties at the Area 2 supply services warehouse for the past five years. She just showed up one day and stayed, says **Billy Boner**, head of supply and materials. "Miss Kitty" also has supplied four kittens for GTRI employees' homes. (Photo by **Lea McLees**)

#### Microwave and Antenna Technology Development Lab

**John C. Alford** has transferred to TSDL. **Joel E. Ruda** has resigned.

#### Threat Systems Development Lab

**Steven A. Marc** joins the lab as student assistant/co-op. **Michael A. Lee**, **Anthony D. Jampe** and **Phillip G. Pflueger** have terminated.

### Personal Notes

#### Our Sympathy

... to **John Mills** (TSDL) upon the March 13 death of his father-in-law.  
 ... to **Lee Hughey** (RCO), whose mother-in-law died March 30.  
 ... to **Gene Greneker** (RIDL), whose father died April 14.  
 ... to **David Roberts** (EOPSL) upon the recent death of his mother.

#### Cradle Roll

**Donna Gamble** (EOPSL) and her husband Mickey celebrated the birth of daughter **Jessica Renee** on January 4.  
**Melvin L. Belcher** (RSAL) and his wife, Christie, a former GTRI employee, welcomed a daughter, **Morgan Amanda**, on March 3.  
 A daughter, **Jacqueline Michelle Howard**, was born to **Alix** (CMDL) and **Dan Howard** (COML) on March 9.  
 A son, **Ryan Josh**, was born to **Renee** and **Larry Corbett** (EOPSL) on March 26.  
 Jennifer and **Todd Johnson** (TSDL) welcomed a daughter, **Raquel Marie**, born April 2.

*How many Georgia Tech graduates are there in your family? If the answer is more than one, give us a call! THE CONNECTOR is planning a feature on employees who have earned degrees from Georgia Tech. We have data on who holds the oldest, newest, most and other topics, but also would like to include the GTRI family that has earned the most Tech degrees collectively. If you think your family is a contender or if you have questions, call 894-3444 and ask for **Lea McLees** or send e-mail to [lea.mclees@gtri.gatech.edu](mailto:lea.mclees@gtri.gatech.edu) by May 6.*

#### Materials Science and Technology Lab

**Rosemarie Szostak** was a keynote speaker at a special symposium on molecular sieves and zeolites honoring Dr. Edith Flanigan, winner of the 1993 Garvin-Olin Medal. The medal honors the leading woman in the field of chemistry. Szostak spoke on "New Approaches to Molecular Sieve Synthesis" at the March 30 through April 1 gathering, which was part of an American Chemical Society annual meeting.

#### Modeling and Analysis Lab

**Jageet Sidhu** recently spent four weeks in India, lending his expertise in electromagnetic scattering and signal processing to the Government of India under the United Nations Industrial Development Organization exchange program. He held seminars for the scientists and engineers at the Society for Applied Microwave Electronics Engineering and Research (SAMEER) headquarters in Bombay and Madras. He also conducted a two-day workshop at the SAMEER Centre for Electromagnetics in Madras.

#### Facilities Management Department

**Harry Vann** completed a Master of Public Administration degree at Georgia State University during winter quarter, 1993.

### Personnel News

#### Computer Science and Information Technology Lab

**Matthew Stephaniw**, **Allen Walston**, **William Eason** and **Geoff George**, have terminated.

**Chris Carothers** transferred to the College of Computing.

**Chase Hacker** is converting to temporary employment.

#### Countermeasures Development Lab

Co-op **Don Scott** has been assigned to CMDL temporarily from ESML.

#### Electronic Support Measures Lab

Co-op **David W. Runton** has joined the laboratory.

#### Materials Science and Technology Lab

**Jim Hubbard** has retired after 33 years of service.

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