The GTRI Connector

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Did You Know...

•Granite conducts sound ten times faster than air.

•If hot water is suddenly poured into a glass, the glass is more apt to break if it is thick rather than thin. That is why test tubes are made of thin glass.

--from *2201 Fascinating Facts* by David Louis

GTRI Prepares to Develop International Contracts

By Lea McLees, RCT

A visiting associate professor in Georgia Tech's School of International Affairs is helping GTRI add an international flavor to its list of sponsors.

Jennie Lincoln has been asked by the Program Development Office (PDO) to help identify possible linkages between GTRI and the international marketplace. This move is part of an effort to have 10 percent foreign contracts by 1997, a goal set in GTRI's strategic plan.

"This also offers the possibility of fostering exchange between scientists in other countries and GTRI for collaboration and development," Lincoln said. "The idea is to expand the reach of the millions of dollars in investment here for use in the international arena, as well."

Lincoln has a decade of experience working with other countries, particularly in Central and South America. Before coming to Georgia Tech she was associate director of the Carter Center's Latin American and Caribbean program. She holds a Ph.D. in political science from The Ohio State University, speaks fluent Spanish, and has conducted field research in Peru, Chile, Panama and all Central American countries. Lincoln was a Fulbright Professor at the National University of Costa Rica and the University of Costa Rica between 1984 and 1986 and has been a credentialed observer at elections in seven countries, including four with former president Jimmy Carter.

Lincoln's consulting associations include private sector corporations; non-profit organizations such as the Ford Foundation, the MacArthur Foundation and the Kellogg Foundation; the U.S. departments of State and Defense and the Agency for International Development; as well as international organizations, including the Organization of American States (OAS) and the United Nations. She brings to GTRI knowledge of what it takes to successfully conduct business in other countries, a sensitivity to foreign language, access to a network built

Continued on page 4

Jennie Lincoln is helping to identify possible linkages between GTRI and the international marketplace. In this photo she is surrounded by mementos from some of the foreign countries where she has worked. (Photo by Lea McLees)

GTRI Pursues Industry Partnership Goals

By Lea McLees, RCT

Industry interaction and the economic development it promotes are a GTRI tradition. The Georgia Legislature provided for such activity in 1919 when it created the Engineering Experiment Station.

This tradition continues in GTRI's strategic plan, which challenges the organization to form partnerships with industry to develop and insert technology. John Nemeth, assistant to the director of GTRI and head of the EOEML's Environmental Sciences and Technology Program, is tracking GTRI's industry partnership efforts, particularly in environmental technology areas. This effort supports the work of Georgia Tech's Economic Development Institute (EDI). Partnership involves submitting joint proposals with industry or government that will encourage technology development and use.

"When you look at what GTRI does, almost everything has a potential for industry or government partnership, or offers an opportunity to develop it," he said. "GTRI promotes these kinds of activities by participating in programs such as Corporate Liaison, in-service classes, technical assistance programs for industry, and a whole variety of research projects which will hopefully lead to commercial applications."

GTRI is currently partnering with Shaw Industries; the Pollution Prevention Assistance Division of Georgia's Department of Natural Resources; and Georgia State University on a Department of Energy grant to reduce waste in carpet production. The

Continued on page 5

Observed & Noted

GTRI instrument makers are hard at work turning raw materials into useful equipment. *Meet them on page 2.*

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Want to be in the know about HRO? *Turn to pages 2 and 3 for insight into GTRI's work at Redstone Arsenal.*

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GTRI researchers have been funded for some interesting internal research projects. *Find out what they are investigating on page 4.*

■

Need some help dealing with a problem that may be affecting your work? The Faculty Staff Assistance Program is here for you. *Learn how to participate on page 5.*

■

Jim Clark apparently has become the GTRI employee who holds the most Tech degrees. *Read about his achievement on page 5.*

■

THE CONNECTOR caught up with busy new employee Jim Allen of Washington, D.C. recently. *Turn to page 6 to find out what Jim is working on.*

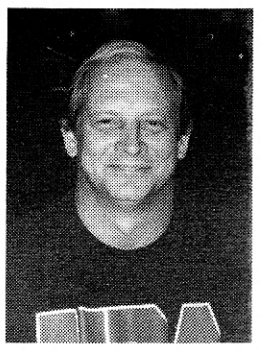
■

Need something to brighten a cold winter day? *Christmas arrives at GTRI in January on Page 7.*

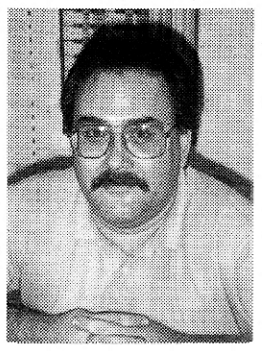
■

As always, your colleagues are bringing home professional and personal honors. *Get the scoop on page 8.*

News & Notes



Terrell Brown



James Ross

Kenny Cupp

Don Swank

Dennis Brown

Meet the Instrument Makers

These folks build the specialized equipment our researchers use in their work— parts that ensure the precise movement of an antenna, for example. Although some mention special skills, each of them can use every machine in GTRI's shops.

Terrell Brown
Came to Tech 10 years ago. Has been an instrument maker for three years. Also does work for the School of Mechanical Engineering. He and his colleagues at Cobb County work mostly with radar and microwave components, aerospace and wind tunnel needs. He says accurate prints and instructions are the best gift an engineer can give him. His special skill is being able to program the computer that runs the Cobb County shop's CNC milling machine. After work he enjoys watching his children play in sports events.

James Ross
Came to Tech 12 years ago. Has been an instrument maker for two years. He has also worked with paper science researchers on campus. Enjoys working at Cobb County because he can interact closely with the researchers for whom he builds equipment. He also likes the fact that he usually builds individualized prototypes. He enjoys hard detail work and he oversees the Cobb machine shop when the supervisor has to be away. After work he camps, fishes and plays in a bluegrass band, "Indian Summer."

Kenny Cupp
Came to Tech eight years ago. Has been an instrument maker at Cobb County for two years. He is proud of having 23 years in the machine shop business. He enjoys forming a chunk of metal into a useful, accurate object, and he says the more difficult a task is, the more fun it is. Among his most interesting projects was creating a heater for helicopters that are used to rescue people lost in cold climates. His top skills are using mills and lathes. After work he plays golf, hunts and fishes.

Don Swank
Came to Tech almost 13 years ago. Has been an instrument maker for about eight years. He does most of his work in the Baker Building for EOEML, and some work for other labs. Most of his recent projects have been related to molecular beam epitaxy, which involves depositing atoms on a surface. He is proudest of his work on the NASA radiometer, which measures precipitation and helps scientists understand climate and weather. He enjoys working with engineers, helping them transform ideas into realities. After work, he plays a lot of tennis.

Dennis Brown
Came to Georgia Tech 15 years ago. Has been an instrument maker in the Hinman Building for almost 10 years. He enjoys helping people, especially those who are not sure exactly what they need. Dennis says that teamwork from design to manufacture will help GTRI meet and surpass its goals. He is glad that more and more often engineers invite him to their labs to see how they use his finished products. After work he builds and races cars.

In the Know about HRO

●McMorrow Labs, the building where most of HRO is located, is where the Redstone Rocket was developed. The Redstone was one of this country's first surface-to-surface missiles — one rocketed astronaut Al Shepard into space.

●HRO is the most ethnically diverse unit of GTRI, by percentage of lab employees. Ethnic groups represented include African-American, Chinese, Hispanic, Indian, Persian and Vietnamese. The average age of HRO staff is 40.

●Huntsville has no student assistants, but has spaces for 20 co-ops, an uncommonly large number for a lab its size. Co-ops are split evenly among Georgia Tech, Auburn University and University of Alabama/Huntsville students. "Local contractors stand in line to grab our students after graduation," Stanley said.

●All HRO employees, including students, must have at least a secret clearance.

●To reach a Huntsville colleague quickly, call or fax — rather than sending e-mail. Connectivity problems between government communication facilities and the Georgia Tech campus make e-mail access difficult at HRO.

●As part of GTRI's reorganization a field office was set up in Huntsville in addition to HRO, but located off Redstone Arsenal. Potential research sponsors in Huntsville, in addition to MICOM, include NASA, the Corps of Engineers, and the technical community in Huntsville that supports the arsenal. Dave Wyatt is the contact: (205) 883-3503 office, (205) 656-7169 mobile. *(See related article, page 3.)*

SELECTED DECEMBER '93 AWARDS

Title	PI/Laboratory	Sponsor	Funded Amount
Precursor Systems Analyses of Automated Highway Systems	Youngblood, W. (AERO)	Raytheon Company	57,205.00
Research in Acoustics and Noise Control	Ahuja, K. (AERO)	NASA	285,000.00
A Feasibility Study for an Inventory Control Sensor Subsystem	Smith, M. (ELSYS)	Franwell Corporation	65,049.00
EW Techniques Analysis	Lilly, L. (ELSYS)	Air Force	563,735.00
Primes GPS Satellite Constellation Simulator	McDougal, G. (ELSYS)	Air Force	113,019.00
GA Tech Synthetic Imaging Missile Simulation (GTSIMS) On-Site Installation	Sheffer, A. (EOEML)	US Dept. of Defense	36,752.00
High Density Microwave Packaging for Next Generation Aircraft & Space-Based	Harris, H. (EOEML)	Air Force	215,000.00
Analytical Testing Services for Paper & Related Materials	Detter-Hoskin, L. (EOEML)	EKA Nobel, Inc.	50,000.00
Visual/Electro-Optical (VISSEO) Detection Analysis	Schmieder, D. (EOEML)	Army	400,000.00
Data Bases & Automation in Support of Missile Systems	Gann, G. (HRO)	Army	49,987.19
Software Arch & Dev. for FORSCOM Automated Intelligence Support System (FAISS)	Atha, J. (HRO)	Army	158,000.00
94 GHz System Support	Moore, L. (SDL)	Lockheed - Fort Worth	141,400.00
Adaptive Residual Vector Quanitization for Waveform Coding	Barnes, C. (SEAL)	Clark Atlanta University	48,938.00
Antenna Study	Acree, W. (SEAL)	Modern Technologies, Inc.	48,210.00
Radar Hardware Development Analysis	Belcher, M. (SEAL)	Army	235,000.00

Where's the Sponsor? Next Door, for HRO Employees

By Lea McLees, RCT

It's early morning in Alabama, and Huntsville Research Operations (HRO) Director Richard Stanley is headed for a meeting with GTRI researchers elsewhere at Redstone Arsenal.

As he starts his car he spies a potential research sponsor walking in the parking lot, and intercepts the man for a quick update on a recent Army decision to develop an improved radar simulation that Georgia Tech has evolved.

"That's what we call a 'target of opportunity'," he says as he exits the parking lot.

HRO folks get "targets of opportunity" like that one almost everyday. Working at Redstone Arsenal west of Huntsville means that GTRI employees are often conducting research a few doors down the hall from their sponsors' offices.

"It's not uncommon for the sponsor to stop by and ask you to go to a meeting on a moment's notice," Stanley said.

HRO, formed in the 1970s, is almost a microcosm of GTRI. Its 42 employees work in systems integration, data analysis, sensors, systems analysis and future technologies. HRO researchers have access to the world's largest missile flight simulation facility. About 80 percent of HRO's work is classified, and all of their contracts are with Redstone's Research Development and Engineering Center.

A university branch on an arsenal — Redstone is shared by the U.S. Army Missile Command (MICOM) and the National Aeronautics and Space Administration (NASA) — is unusual. Ron Davis, deputy director for system simulation at Redstone since 1988, has found the Georgia Tech presence at the arsenal very productive.

"We are in a limited environment, and we can't hire everyone we want to have," he said. "The Georgia Tech operation is an effective extension of our work operation. They provide us significant expertise in electromagnetics, simulation and modeling. They do an excellent job for us."

Life at HRO

HRO scientists and engineers tend to work on smaller projects than their campus-based colleagues, says research engineer James Smith.

"Here, six months is the standard contract duration, and anything over $100,000 is a large contract," he said. "We provide proximity and fast turnaround."

And junior-level HRO researchers are encouraged to develop their own contracts and projects, something research engineer Huy Nguyen likes. "What attracted me most was being able to manage your own project," he said.

That atmosphere makes HRO a good place for self-starters, says research engineer Larry Schaefer. "We put our hearts and souls into our work, and we look at our jobs in a personal way," he said.

The Campus Connection

HRO also offers research links to Georgia Tech researchers in Atlanta. In a casual discussion with a MICOM official five years ago, Stanley mentioned Georgia Tech's Manufacturing Research Center (MARC). MICOM eventually became a MARC member, resulting in a $10 million contract, 90 percent of which comes to campus units. Current HRO/campus collaborations include work with SEAL's Jeff Holder on a kinetic energy project, for example. Smith often calls on campus researchers to assist with the photonics of electro-optic devices required for the radar simulations he develops.

Says senior research associate Wayne Miller, a member of HRO's Future Technology Group: "People in Huntsville know the expertise is strong on campus, and I can act as a liaison for them."

Some Specific Projects

Much of HRO's work is in modeling and simulation. Research scientist Laura Britton writes software for a real-time graphic simulation, developing possible battle scenarios and testing missile systems. "We stress the systems to find out how far they can go," she said.

Senior research engineer Barry Bullard supports junior and intermediate engineers in electro-optics and infrared research, and oversees interaction between HRO and the other GTRI labs.

"We are studying how to build infrared focal plane arrays smaller, cheaper and better," he said. "A lot of work at HRO is in figuring out how the target looks on the screen."

Information systems coordinator Gloria Gann and the Data Analysis Group she supervises are automating Redstone's System Simulation Directorate.

"We are writing front ends to technical databases so that if you are on a work station, PC or Mac, you don't need to re-code to get into a database," she said. "We're also building databases for documents."

Future Directions

The Huntsville field office GTRI recently opened off the arsenal is headed by senior research associate Dave Wyatt. He helps match GTRI-wide capabilities with sponsor needs in the Huntsville technical community — that gives Stanley more time to devote to running HRO.

One of Wyatt's goals is improved communication with campus researchers to find out about their research capabilities and interests. "Lots of people at Huntsville would give their eyeteeth to get Georgia Tech on a team with them," he said.

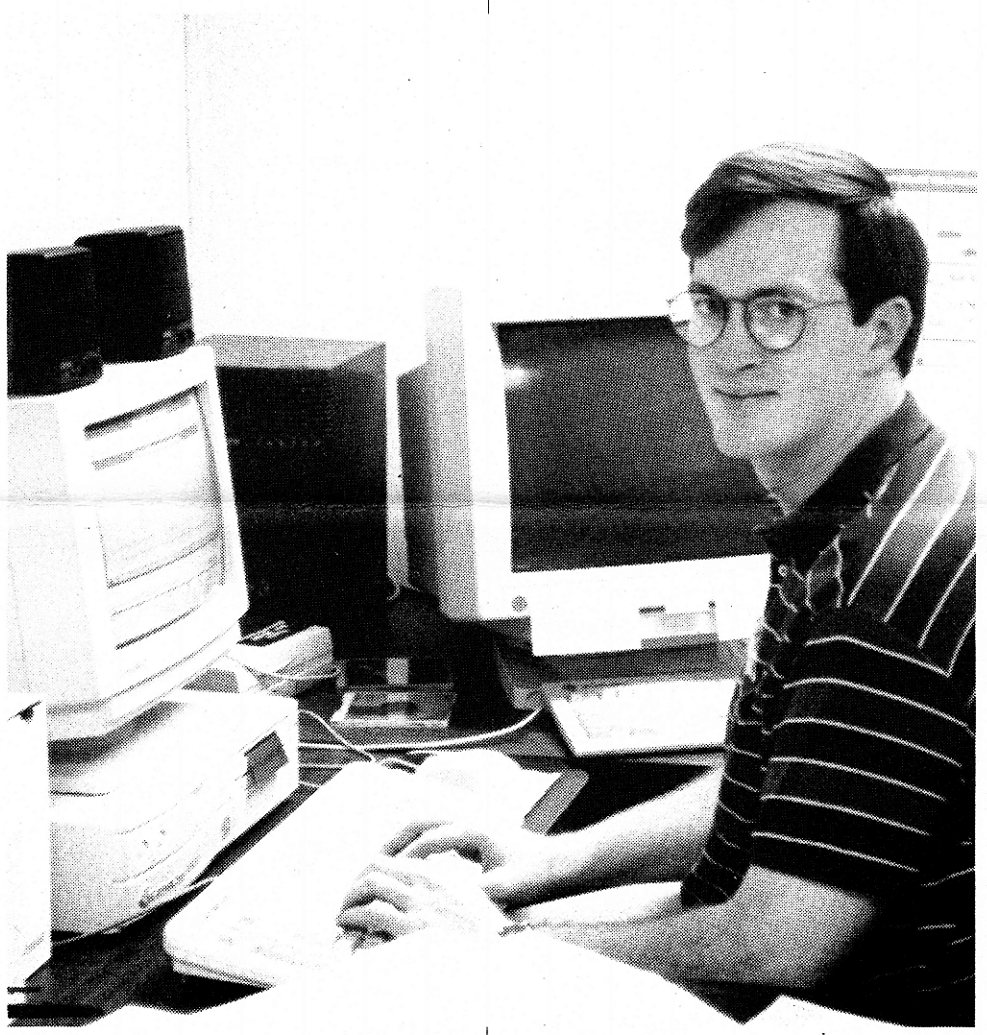
Bullard would like to see GTRI researchers involved in testing radar systems in a virtual reality environment. Miller believes that researchers can help the military by building equipment smaller and cheaper.

The recent uncertainties of the Army programs that are HRO's primary source of research funding will require continuing efforts to diversify research at Redstone, Stanley said.

"We are working hard to broaden our sponsor base, to reduce the trauma that occurs when major program cancellations ripple through the Research, Development and Engineering Center," Stanley said.

With the current Army emphasis on multi-mission, multi-mode missile programs, sensor applications have expanded beyond the traditional radio frequency region to encompass almost the entire electromagnetic, DC to light, spectrum, Stanley said.

"This certainly increases the challenges to what is already a very 'sporty' course of research," Stanley said. "Nevertheless, our position at the cutting edge of the Army's missile research activities provides an uncommon opportunity for Georgia Tech to play key roles in missile technology development."



Bill Chandler, a programmer at HRO, works with Gloria Gann in the Data Analysis Group. See related HRO article, page 2. (Photo by Lea McLees)

News & Notes

Focus on GTRI's Future

Funding for Internal Research Announced

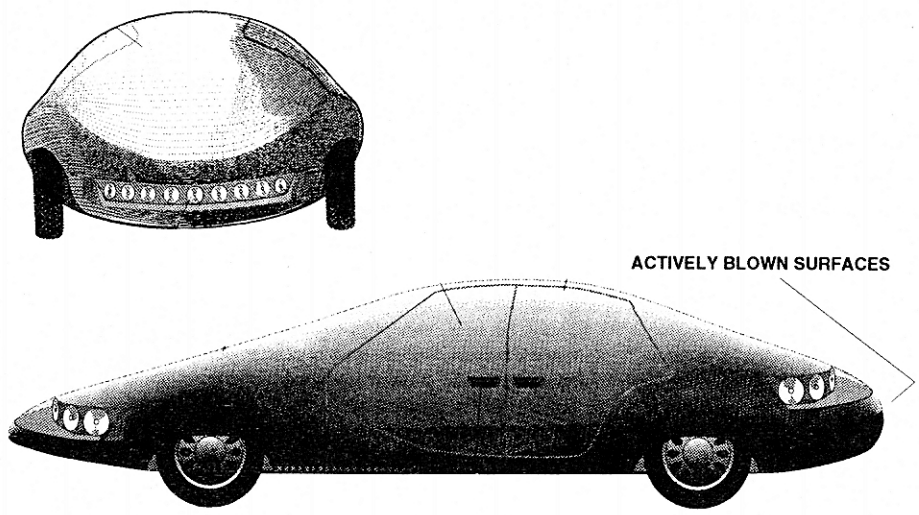
By Lea McLees, RCT

Internal research is a top priority at GTRI with the December funding of six new research proposals. The projects were selected from 34 proposals reviewed by the GTRI Fellows Council. Most of the six are both campus-wide and interdisciplinary — one project's research team even includes a colleague in Moscow.

Funding these projects is part of GTRI's strategic plan effort to encouraging and supporting new research efforts in targeted areas benefitting society. Following are brief summaries of four projects. Look for two more in the February issue.

Neural Feedback for Computational Vision: Knowledge of how humans perceive objects could be used to improve the design of cars, planes, computer displays and more. This project is an enhancement of Doll and colleagues' previous model that mimics how weapon system operators pick out targets on busy landscapes. The researchers will add feedback to the system by accounting for information transmitted from higher to lower levels in the nervous system. This will make the model even more representative of human neurophysiology. The model could be used to make potential targets less visible to enemies in a military confrontation, and to design cars and other vehicles so that they are more visible in bad driving conditions. It also could help designers improve the radiological images physicians use to diagnose certain diseases, and the ways workers inspect products on an assembly line. Participants include Ted Doll and Dave Schmeider (EOEML), Steve Deweerth (ECE), Bill Rhodes (Center for Optical Science and Engineering) and Elizabeth Davis (PSY).
The project involves Ph.D. & master's students in each of the participating units.

Non-Doppler Remote Sensing Techniques for 3-D Wind Field Mapping: Wind shear and downdrafts near airports have caused several airplanes to crash in the past few years, because there is currently no practical means of remotely measuring both the speed and direction of winds. This project offers a potential solution: A new way of measuring winds in three dimensions, based on laser technology combined with modern computing power. A beam of light from a pulsed laser will be used to probe the atmosphere, and some of the light scattered by aerosols and molecules will be collected by an optical receiver, as in a conventional lidar. However, instead of averaging together the data from many pulses, winds will be determined by a correlation analysis that is based on counting the photons from each laser pulse. The new appraoch was suggested by Alexandr Gurvich of the Institute of Atmospheric Physics in Moscow. He will be a participant in the project, along with project director Mikhail Belenkiy and Gary Gimmestad, both of EOEML. Other participants are Robert Roper (EAS) and Jeff Cordle, who is a graduate student in EAS and is basing his thesis research on this work.



In the work on the "FutureCar Test Bed: Task 2" researchers are designing a series of vents through which air is channelled to reduce drag on vehicles. This is just one of several GTRI internal research projects funded. (Courtesy Rob Michelson)

Initial Tasks to Develop a "FutureCar Test Bed, Task 2: Components of tomorrow's cars are being developed at GTRI today. Researchers are designing actively blown surfaces — a series of vents through which air is channeled — that will reduce drag on vehicles. Drag occurs when air blows over and around a vehicle, stirring into whirlpools behind the car and around projecting objects such as mirrors. Drag not only causes noise — it makes the car's engine work harder to maintain speed, thus using more fuel. Circulation control has never been applied to cars of any type before this project. The entire FutureCar testbed, a platform for transportation system research, is two generations ahead of current advanced thinking on electric cars. Those working on the project are AERO's Rob Michelson, Bob Englar and Marilyn Smith and co-op student Curt Niebur.

Initial Pilot Testing of Non-Pharmacologic Techniques for Diagnosis and Treatment of Dysfunctional Brain Disorders: The main treatment for brain dysfunctions such as attention deficit disorders, depression and autism in the past has been to administer prescription drugs, some of which may have undesirable side effects. GTRI researchers and their colleagues at Emory University and the Atlanta Speech School are evaluating emerging new, non-pharmacologic technologies for treating brain dysfunctions. Such technologies may "re-educate" the abnormal brain using programmed auditory and visual sensor stimulation, and might supplement drug therapies. In this pilot effort, a leading off-the-shelf sensory stimulation system will be evaluated for effectiveness by studying electrical activity in the brain and measures of behavior change. Those working on the project are GTRI's Jeffrey Gerth, George McDougal, Harold Engler and Philip West, all of ELSYS; Emory's David Freides; and Jane Blalock of the Atlanta Speech School.

Fellows Want Your Input

The GTRI Fellows invite comments and specific suggestions on improving research enterprise at GTRI. To offer input you may contact any of the Fellows directly:
Krish Ahuja (AERO), 528-7054; Larry Corey (SEAL), 528-7156; Devon Crowe (CS), 894-3500; David Flowers (ELSYS), 894-7195; Bill Rhodes (EOEML), 894-2929; and Chris Summers (EOEML), 894-3420.

Lincoln *From page 1*

over a decade and contacts with civilian and governmental decision makers. Here at Georgia Tech she teaches courses in Latin American politics, U.S. foreign policy, U.S. defense policy and related topics.

Lincoln's work with a major telecommunications company, as well as the Department of Defense Institute for Security Assistance Management (DISAM), interested Don Wilmot, director of program development.

"I felt there was a strong overlap between her knowledge and networks and GTRI's foreign program development aspirations," he said.

Lincoln sees four targets of opportunity for linking GTRI and the international arena:

- Building on contacts with the U.S. government and their connections with foreign countries.
- Providing technical services and development for international organizations such as the United Nations and the Organization of American States.
- Assisting foreign governments, to support modeling the production of a product for which the country has necessary raw materials or potential labor pool.
- Helping private sector businesses step a generation or two ahead in their work by offering models, prototypes, simulations or plans for updating their processes.

Lincoln is exploring possible applications of GTRI technologies in Latin America in the fields of telecommunications, transportation, manufacturing and the environment. She sees the opportunity for GTRI to establish linkages in both military and civilian contexts. She will be working with various labs to identify those linkages and to promote GTRI in the international arena.

"The potential to extend GTRI's reach into the new global context is both exciting and timely," Lincoln said.

If you would like to suggest GTRI technologies that have potential international applications, you may call Jennie Lincoln at 894-1901 or send e-mail to jennie.lincoln@inta.gatech.edu.

Profile & Insight

Employee Assistance Program Here to Serve You

By Lea Mclees, RCT

Stressed out? Concerned about a substance abuse problem? Dealing with office issues? Jan Price is here to help.

Price leads the Faculty and Staff Assistance Program (FSAP) at Georgia Tech. FSAP provides free services to Tech employees who are having personal or emotional problems that may affect work performance. Among the situations Price can help employees address are nervous or emotional disorders, drug or alcohol misuse, marital problems and other concerns.

"The idea is that we want to keep people mentally healthy and working," said Price, a licensed social worker. "It's all part of managing health care costs and taking care of our work force."

Tech is the third unit in the University System of Georgia to offer an employee assistance program, joining Georgia State University and the Medical College of Georgia. Nineteen Tech employees used FSAP help between mid-November and mid-December alone.

Price provides short-term assistance and counseling to all Tech employees. She offers referrals for those who need long-term therapy, drug rehabilitation assistance or other services, keeping in mind each person's budget and individual situation. She follows up with each person she assists, to make sure the employee's needs were met and get feedback on the program.

"Employee assistance programs like FSAP are the 'emergency roadside service of mental health'," she said. "Every once in a while we have something we need to check out, or we have a breakdown and we need to change a tire. If more work is needed, I can find someone who can help."

Price also will be working closely with the benefits department, giving them feedback about how well mental health benefits meet the needs of Tech employees.

Visits to Price's office in the Coliseum Annex are free, generally last 50 minutes, and do not affect one's health care coverage. Employees do not have to use sick leave or vacation time to see Price. Visits and counseling records are confidential — they are not part of the employee's official personnel file. The content of the records does not affect promotional opportunities, and may be not used as a defense against disciplinary action.

Price holds a master's degree in social work from the University of Georgia in 1992. She has interned in Lockheed's employee assistance program and worked for the Northeast Georgia Employee Assistance Program, a private, nonprofit United Way agency. That program provides employee assistance to businesses in 10 rural counties.

To leave a confidential message or schedule an appointment, you may call 894-1225.

Jan Price can help Tech employees who are having personal or emotional problems that may affect work performance. (Photo by Lea McLees)

"Some Students Just Take Longer Than Others..."

By Lea McLees, RCT

Jim Clark (EOEML) first entered graduate school at Georgia Tech in 1968. Twenty-five years later he was awarded his fourth Tech degree, a doctorate in mechanical engineering, during the December 1993 commencement ceremony.

"It's not like I had to have a Ph.D," Clark said of his studies. "But once I decided to finish my Ph.D., my goal was to finish college before my children did." His oldest son is currently a senior at Emory University.

Clark has worked at GTRI since February 1978. He is part of EOEML's Environmental Engineering Branch, and helps find ways for companies to prevent pollution and reduce waste production.

Earning his Ph.D. apparently makes Clark the GTRI employee who holds the most Tech degrees. About 29 GTRI employees had earned three Tech degrees each as of Spring 1993. Clark now has four: bachelor's and master's degrees in mechanical engineering, in addition to a Tech master's in industrial management and his Ph.D. He also earned a bachelor's degree in physics from Davidson College in Davidson, N.C. "I just started taking classes in areas I wanted to learn about," Clark says of the variety among his degree subjects.

Clark was not enrolled in classes continuously during the quarter of a century since 1968. He earned his graduate degrees through intermittent study, including 2 1/2 years as a full-time student, but completed most of his studies while enrolled part-time and employed full-time. Clark was awarded a GTRC fellowship for 1991-1992 that allowed him to work on his dissertation while on a leave of absence.

He earned each of his Tech degrees in a different decade ('68, '75, '81, and '93) and was enrolled during eight consecutive presidential administrations (Kennedy through Clinton). He saw the Jackets coaches by seven head football coaches during fall quarters when he was enrolled. His father and sister-in-law earned Tech degrees, and his younger brother did some undergraduate work at Tech.

Nemeth

From page 1

team wants to simplify and mechanize high tech ways of recycling some products used to manufacture carpet. This partnership was also supported through the Georgia Research Alliance's (GRA) investment. The project is a model for the Governor's program to promote economic growth of traditional Georgia industries.

GTRI and the Westinghouse Savannah River Site are partnering on environmental technologies such as low-pollution hydrogen fuels, and methods of cleaning up toxic materials — plasma torch applications, for example, could be useful in the latter area. The partners have submitted a joint proposal to the Advanced Research Programs Agency (ARPA) to promote the transfer of environmental technology into small and medium-sized businesses. Other partners include the State of Georgia through the Georgia Research Alliance; and South Carolina's Department of Commerce, which together formed the Southeastern Environmental Research Association.

Opportunities that might lead to industry partnerships by promoting understanding of industry needs — such as senior internships — are being investigated. GTRI researchers might take temporary assignments in industry, and industry researchers would work here.

"This would allow the industry people to see what's going on at GTRI that may be applicable to them — sensor application in manufacturing and in automobiles, for example," Nemeth said. "Sharing experience and needs also would allow us to see some of the applications of research in industry, and the realistic potential of those applications."

Potential industry partnerships still exist in the defense industry, despite downsizing, Nemeth said.

"We are identifying opportunities to enhance the national security mission of Georgia's defense installations and ensure that economic development is linked to that," he said. "As the country scales back certain aspects of the Department of Defense, we are also scaling up our efforts to maximize economic opportunities available. We are looking for new ways to assure that Georgia is a leader in providing for national security against a changing series of challenges, and in economic growth that should be associated with the defense industry in our state."

Continuing exposure and potential opportunities to partner with industry develop through the in-service training and continuing education courses GTRI employees lead. Coupled with technical assistance programs such as the state-supported Waste Reduction and Environmental Compliance Project, these efforts help promote partnerships by giving GTRI an opportunity to improve business and industry in Georgia through technology infusion.

"We also get a lot of ideas through these interactions with business about areas of research our work should address," he said. "To GTRI, this is a lifeblood aspect of economic development."

News & Notes

Calendar

For more information on Office of Information Technology (signified by an "OIT" at end of line) classes listed below, you may call 894-4660 or drop by Rm. 140/Rich Building.

February 10
"Architecture-Independent Parallel Programming Support in Fortran D," presented by Ken Kennedy, director of the Center for Research on Parallel Computation, and Noah Harding Professor, Department of Computer Science, Rice University. 3:30 p.m. reception, 4 p.m. lecture, Rm. 17/College of Computing. Part of the College of Computing's Distinguished Lecture Series.

February 17
"Discount Usability Engineering," presented by Jakob Nielson, Bellcore. Noon, Rm. 102 A/B, MiRC (Pettit Building). Part of the Graphics, Visualization and Usability (GVU) Distinguished Lecture Series.

GVU Demo Day, 1:30-5 p.m., GVU Lab/College of Computing. All are welcome. Refreshments served.

February 23
Introduction to the Flow Analysis Software Toolkit (FAST), 5-7 p.m., Rms. 101 and 259/College of Computing. OIT.

February 24
Introduction to Parallel Virtual Machine (PVM), 1:30-3:30 p.m., Rm. 239/Rich.

February 28
Understanding and Using Your Georgia Tech Computer Account, 10 a.m.-noon, Rm. 239/Rich. OIT.

Research In the News

During September and October, news of Georgia Tech research appeared in more than 67 publications with a combined circulation of more than 7.6 million. Highlights of these media placements are shown below, with circulation statistics from the publications cited:

●Work by John Daher and Glenn Champion on the **EMI of photonic devices** continued to generate attention for the Sensors and Electromagnetic Applications Lab. News of the research appeared in *IEEE Circuits & Devices*, *Interconnection Technology* (35,000), *Laser Focus World* (60,000), *Lasers and Optronics* (60,000), *Lightwave* (26,266), *OE Reports* (30,000) and *Photonics Spectra* (81,600). News of this work has appeared in publications with a total circulation of nearly 550,000.

●Comments from David Roessner's study of **industry interaction with the national laboratories** appeared in articles published by two key scientific magazines: *Science* (150,000), and *Scientific American* (600,000). Roessner is a faculty member in the school of public policy.

●The **Phosphor Technology Center** led by Chris Summers has gained both local and national attention through articles in *The Atlanta Business Chronicle* (35,000), *The Atlanta Journal-Constitution* (505,000), *Electronic Engineering Times* (127,087), *Electronic Warfare Digest*, *Inside R&D*, and *Photonics Spectra* (81,600).

●A description of Georgia Tech research on **virtual reality** was included in a lengthy article published in *IEEE Spectrum* (291,249).

●A study of how rudimentary **communication among robots** can improve their interaction continued to generate visibility. The work was reported in *Modern Materials Handling* (105,850), *Chief Information Officer* (7,000), *The Palm Beach Post* (162,812), *The Electron* (50,000), and *Tooling and Production* (80,100). Total circulation for publications carrying news of this work has now topped 2.2 million.

●Research and simulation on **vision of weapons system operators** was the subject of articles in *Design News* (166,688), *Defense News* (40,000) and *Defense and Aerospace Electronics*. The research was done by Ted Doll and others in the Electro-Optics, Environment and Materials Lab.

●*The Chicago Tribune* (1,131,226) described how a **plasma arc torch** can be used to stabilize weak soil for construction projects. The work is led by Lou Circeo in the Construction Research Center.

●*Compute Magazine* (275,044) described research on a **synthetic vision system for aircraft landings**. Work on the project was done by Brian Hudson and Walter Horne.

●The **Georgia Research Line** was described in articles published in *Design News* (166,688) *Link-Up* (10,000) and *FASEB Journal* (10,000). Created to serve the news media and others interested in research, the Line is a dial-up computer bulletin board created by the Research Communications Team and the Information Technology and Telecommunications Laboratory.

News releases and magazine articles produced by RCT are available in Georgia Tech's Internet Gopher under the "Research News and Information" directory. The text of material available in the Gopher can be downloaded for use in other documents, and the Gopher is capable of full-text searches. Research news from Georgia Tech, the University of Georgia, Emory University, Georgia State University and the Medical College of Georgia can be read and downloaded from the Georgia Research Line. To reach the Line, set your modem to dial 894-8268 or 894-6985. For more information about using these services, call RCT at 894-6986 or 894-6987.

GTRI Greetings

Welcome to our newest employee!

Eight Good Things We Know About James S. Allen

1. Jim comes to GTRI from an Air Force career that culminated in a three-year assignment as assistant chief of staff for operations, North Atlantic Treaty Organization (NATO).

2. Based in Washington, D.C., he is focused on identifying research opportunities for GTRI in support of our lab directors. He is working closely with Bill Smith and Patty Bartlett, also of the Washington office.

3. Jim was born in Lexington, Mass.

4. A retired U.S. Air Force general officer, Jim was in the service for more than 25 years, predominantly as a fighter pilot. Highlights include flying 375 combat missions; serving as the first commander of the U.S. Stealth Fighter (F-117) program; and being military assistant and special advisor to the Secretary of the Air Force.

5. Immediately following his retirement from the Air Force he served as an independent consultant based in Washington, D.C. for numerous private organizations.

6. Jim has been listed in *Who's Who in America* for the last several years; he attempts to play golf when time allows.

7. If you need something in Washington, you can call Jim at 703-528-0883; send a fax to 703-528-8419; write an e-mail note to jim.allen@gtri.gatech.edu; or mail a letter to GTRI, 1700 Northmoore, Suite 1910, Arlington, Va. 22209.

8. If you are headed to Washington, please call Jim and stop in for a visit!

News in Brief

Georgia Tech was recently awarded software worth $3.1 million from Viewlogic Systems, Inc.

The electronic design automation (EDA) software is being used by GTRI to develop advanced electronics, including programmable logic devices (PLDs) and field-programmable gate arrays (FPGAs). In all, Viewlogic equipped 36 engineering workstations with an EDA framework, OpenFrame, and powerful design tools from its UNIX-based Powerview family.

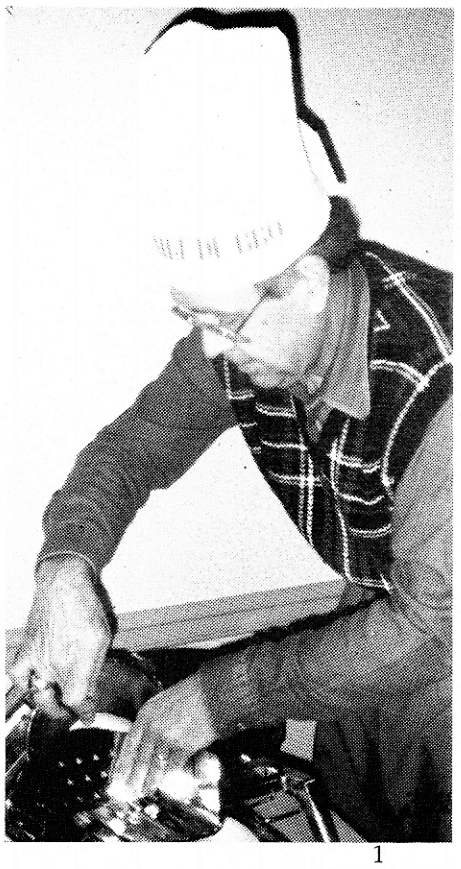
"We're planning designs now with 50 megahertz clock speeds and more," said research engineer Neil Lareau (ELSYS). The design tools we had before just weren't up to the task. With Viewlogic, we can easily tackle those high complexity projects."

The School of Electrical and Computer Engineering (ECE) will participate in a similar grant/purchase of 15 copies, said associate professor James Hamblen. Students will use the software in academic computer engineering labs.

In addition to performing contract development work, GTRI will put its Viewlogic tools in the hands of more than 100 electrical engineering students each year.

Christmas in January

Need some fun to liven up these cold winter days? While we don't have a Colorado ski package or a trip to Bermuda to give away, we do have some pictures of GTRIers frolicking in December. Here's a brief look back at some of the holiday food and fellowship you organized.



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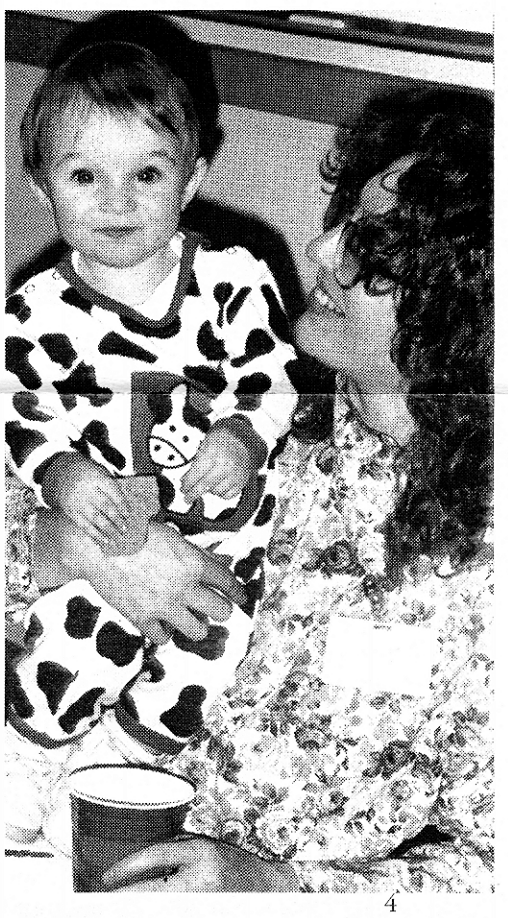

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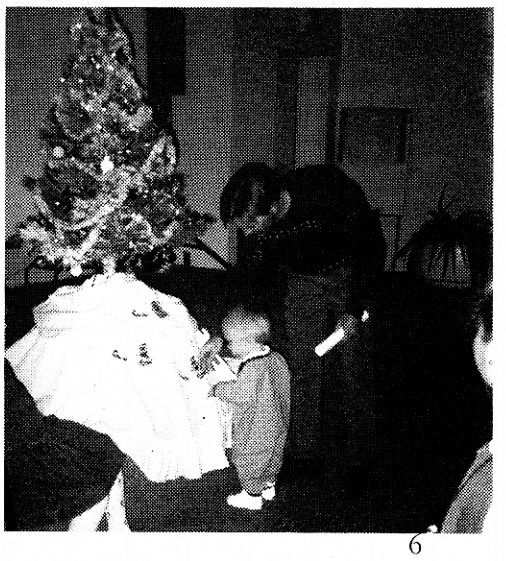

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Focus on Folks

1. Support groups PST and RCT combined their cooking talents to celebrate Christmas together. Pat O'Hare donned an apron emblazoned with "Don't Kiss Me, I'm Busy," and a chef's hat to slice the turkey and ham. (Photo by Lea McLees)

2. A chorus of employees sang at the Electronic Support Measures holiday party.

3. Cheryl Barnett (standing) hands out Christmas gifts to (left to right) Linda McGinnis, Jerrie Clark, Sherry Travis, Barbara Cranfill and Susan Carcione at the luncheon for women who work at Cobb County. (Photo by Anita Edwards)

4. One special guest at the ELSYS candlelight luncheon was Jacqueline Howard, left. She is the daughter of Alix, right and Dan Howard. (Photo by Lea McLees)

5. Almost of all of the EOEML employees from all over campus attended their lab lunch. The sweet potato souffle earned rave reviews among yam lovers. (Photo by Lea McLees)

6. Stephen Camp, son of Vince Camp (right), takes a close look at the Buzz logos on the tree skirt at SDL's holiday party. (Photo by Anita Edwards)

Focus on Folks

Professional Activities

Electronic Systems Laboratory

John Bordelon, **Michael Kopp** and **Kathy Schlag** presented a two-day course titled "Intrapulse Signal Processing" at IBM, Owego, NY on November 17-18, 1993.

Electro-optics, Environmental and Materials Laboratory

Bob Newson, **John Nemeth**, **Bob Hyde**, **Lamar Carney** (SEAL), **Lou Circeo** (ARCH/CRC) attended a technical meeting this fall at Tooele Army Depot near Salt Lake City, Utah, with the Army's Rocky Mountain Arsenal and Construction Engineering Research Laboratory (CERL). In addition, Newsom presented an overview of the Plasma Application Research Facility at the Government Contractors Orientation of Mixed Waste Integrated Programs, at Clemson Research Park for the Savannah River Site, November 16-17, 1993.

Steve Hays spoke to the Southeastern Rental Operators Association annual meeting in Atlanta on December 5, 1993. The presentation: "OSHA's at the Door...What Should I Have Done?"

David Jacobi presented sessions entitled "Hearing Protection" and "Respiratory Protection" to about 75 participants at the Georgia Turfgrass Conference and Tradeshow in Atllanta on December 8, 1993. The annual conference, sponsored by the Georgia Turfgrjass Association and co-sponsored by the Georgia Golf Course Superintendents Association and the UGA Cooperative Extension Service, was attended by more than 600 golf course superintendents and home and recreational turf grass managers. In November, Jacobi was awarded certification in the comprehensive practice of industrial hygiene by the American Board of Industrial Hygiene.

Research Communications Team

RCT has won two awards in the 1994 District III Council for Advancement and Support of Education (CASE) Advancement Awards competitioon. The team won the Grand Award for Media Relations Programs, the top award for the media relations category. The winning entry highlighted the organization of the Georgia Research Line and RCT's use of e-mail to publicize Georgia Tech research. Big thanks go to **Mike Witten** (ITL) and **Dirk Holcomb** (RCT and ARL/STB) for their help setting up and maintaining the Georgia Research Line. In addition, Research Horizons magazine won an Award of Excellence in the special magazines category. Team members include **Mark Hodges**, **John Toon**, **Lea McLees**, **Charlotte Doughty** and **D.W. Senn**.

Research Support and Finance

Charlie Brown has been named acting executive associate director of GTRI. He will handle responsibilities held by the late Bob Shackelford.

Sensors and Electromagnetic Applications Laboratory

Donald Bodnar participated in the IEEE's Technical Activities Board (TAB) meeting in Raleigh, NC, November 18-20, 1993. TAB provides gu idance and policy for the technical activities of the 35 societies and more than 300,000 members of the IEEE. Bodnar attended as vice president of the Antennas and Propagation Society.

Personal Notes

Congratulations!

Randy Kirchain (EOEML) recently completed his B.S. degree in Materials Engineering with an overall 4.0 GPA.

Bruce Chin (EOEML) recently completed his M.S. degree in Mechanical Engineering and also has a 4.0 GPA.

Cherie Wiesman (ELSYS) is a member of the "Swinging Outlaws," a country dance team chosen to perform in the Superbowl pre-game show with the Charlie Daniels Band.

Cradle Roll

Steve and **Margie Brown** (EOEML) are the proud parents of a daughter, Stephanie Theresa, born December 13.

Lynn and **Robert Loebach** (SDL) welcomed a daughter, Emily Talia, on January 6.

Kelly and **Devon Crowe** (Chief Scientist) are the proud parents of a daughter, Ashley Bobbie, born January 18. Her middle name honors the late Bob Shackelford, GTRI's former executive associate director.

Personnel News

Aerospace Sciences Laboratory

William Dorris has begun work as a research engineer.

Electronic Systems Laboratory

George Brown has begun work as a research engineer.

James Corbett has begun work as a research engineer.

John Meeuwissen has joined the lab as a senior research engineer.

Emily Sears has joined the lab as a research engineer.

Ray Whitehead has joined the lab as a research associate.

Jason Collins transferred to ITL.

Mike Minardi is now working full time for the School of Electrical and Computer Engineering.

Donald Lewinski has terminated.

Welcome to the following new student employees: **Lisa Kravchuck**, **Donna Williams**, **George Chen**, **Brad Dixon**, **Sean Forney**, **Eric Lorenzo**, **Todd Houseknecht**, **Mark Waxmonsky**, **Brad Long**, **Wes Wilson** and **Barry Wood**.

Electro-optics, Environment and Materials Laboratory

Jim Hayes has joined the lab as a research scientist.

Gail Goewey has terminated.

Information Technology and Telecommunications Laboratory

Jeffrey Murray has transferred to ELSYS.

Martha Cheryl Thompson, **Steve Tynor**, **Penny Soteres**, **Scott Smith** and **Terri Smith** have terminated.

Stephanie Hardaway has begun work as a clerk.

Systems Development Laboratory

Hans Troemel, Jr. has begun work as a GRA.

Clayton McDonald graduated in December and terminated.

Bits and Bytes

Thank You!

To **Wendy Hanigofsky**, who has done a great job as a CONNECTOR associate editor for ELSYS! Wendy and her husband John (EOEML) are moving to Maryland.

Looking for the Color Printer?

ZEPPO, the Tektronix Phaser II SDX printer, is located just inside the door of CRB 579.

"Quality Minutes" Available

Need a short videotape (four ninety-second segments) to kick off lab meetings or other gatherings?

Charlie Brown (RSF) has a series of tapes called "Quality Minutes" produced by the Juran Institute. Topics featured in the individual, informative segments include the background behind the success of the Ford Taurus; products that failed, and why; organizational successes, such as the mobilizing of 700 people to build a home in 2 hours and 45 minutes; and the importance of determining "root cause" in problem-solving.

For more information, call Brown at 894-3516 or send e-mail to charles.brown@gtri.gatech.edu.

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