The GTRI Connector

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Quote of the Month

When you become successful, don't rust on your laurels.

— *Frank Grazian*

From *Communication Briefings*, November 1991

Nineteen get research awards

The 9th annual GTRI Research Awards presentation on December 5 honored 10 outstanding employees. The recipients were chosen from among 46 finalists selected by committees of their peers from the 90 nominations that were submitted this year.

Bob Lang, chairman of the Awards Committee, presided and introduced the 46 finalists. Other members of the committee were Evan Chastain, Paul Wine, Don Wilmot, Jim Wiltse, and Bill Howard (ex officio, nonvoting).

GTRI Director Don Grace commented that just to be nominated is a special honor, and that the committees make all the decisions without management participation. He, Devon Crowe, Pat O'Hare, Charlie Brown, and Bob Shackelford presented the awards, as follows:

Outstanding Performance in Research: *Joseph A. Bruder* (Radar and Instrumentation Technology Lab), for advancing the state of the art in instrumentation radar system calibration techniques and concepts, resulting in the issuance of two patents as well as another patent application; *Fred L. Eisele* (Physical Sciences Lab), for important breakthroughs in chemical ionization mass spectrometry and atmospheric analytical chemistry, including development of a new method for detecting the hydroxyl radical, the single most important atmospheric cleansing agent; *John A. Hanigofsky* (Materials Science and Technology Lab), for innovative contributions to chemical vapor deposition research, including successful deposition of diamond coatings and preparation of superconducting wire resulting in U.S. and foreign patents; *Jeffrey J. Sitterle* (Threat Systems Development Lab), for outstanding achievements in the areas of atmospheric propagation, high-stability oscillators, and radar systems engineering, including unique contributions to the design and fabrication of the Target Acquisition System phased-array threat radar simulator.

Outstanding Performance in Program Development: *Robert W. Baggerman* (Communications Lab), for extensive efforts in cultivating and maintaining a cohesive thrust in C³I systems exploitation, culminating in the award of seven contracts in the past three years; *W. Jack Lackey* (Materials Science and Technology Lab), for his success in developing basic research program support in the area of materials coating technology, obtaining funding from DARPA, ONR, AFOSR, Wright Patterson AFB, GE, Du Pont, and others; *E. Eugene Toph* (Threat Systems Development Lab), for his efforts in advancing radar technology at GTRI, resulting in the award of two major contracts valued at $6.6 million.

Outstanding Performance in Management or as a Project Director: *B. Keith Edenfield* (Microwave and Antenna Technology Development Lab), for successful direction of the TAS phased-array antenna system project, requiring supervision of 11 researchers spanning multiple laboratories and covering 12 subtasks; *Larry D. Holland* (Electronic Support Measures Lab), for successful management of ESML as exemplified by a high level of sponsor satisfaction, a consistently healthy backlog, and his fair and open style of management; *Bobby J. Wilson* (Communications Lab), for successfully directing 14 foreign C³I system exploitation programs over the past three years; *Charles S. Wilson* (Threat Systems Development Lab), for managing the Special Projects Branch and directing the threat radar simulator development programs.

Outstanding Performance in Research Support: *Richard W. Hoffner* (Management and Project Support Group), for dedication, professionalism and concern for GTRI's commitment to quality in engineering drafting; *Linda D. McGinnis* (Threat Systems Development Lab), for high-quality workmanship in hardware fabrication, electronics assembly, and proposal support; *DeeAnn Reese* (Supply Services Department), for competence, service-oriented attitude, and out-

Continued on page 2

The following persons received awards at the 9th annual GTRI Research Awards ceremony December 5. Front row (L-R), Joe Bruder (RIDL), Linda McGinnis (TSDL), DeeAnn Reese (SSD), Cynthia Rogers (MAPS), John Hanigofsky (MSTL). Second row, William Shamblin (EDL), Charles Wilson (TSDL), Gene Toph (TSDL), Robert Baggerman (COML). Third row, Keith Edenfield (MATD), Jeff Sitterle (TSDL), Richard Hoffner (MAPS). Back row, Jack Lackey (MSTL), Mark Austin (CAL), Tim Hamel (AERO). Not shown, Bryan Duncan (MSTL), Fred Eisele (PSL), Larry Holland (ESML), Bobby Wilson (COML). (Photo by Rae Adams)

Observed & Noted

RIDL staffers develop, teach "hands-on" smart munitions training course. *Story on page 2.*

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Wayne Hodges is named ATDC director. *Read about it on page 2.*

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Barnhart and Chastain are appointed lab directors. *See page 3.*

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EDL sponsors export conference for west Georgia industries. *Also on page 3.*

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A brief summary of the GTRI—Present and Future meetings is presented *on page 3.*

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The Manufacturing Research Center moves into its new building and new Director Mike Kelly discusses his vision for the future. *See pages 4 & 5.*

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Gene Greneker talks about his recent trip to the former East Germany, including a visit to a historic radio site. *Read about it on page 5.*

■

The TQM column and the Dialogue Box are found *on page 6.*

■

There's a page full of the Professional Activities of our busy staff *on page 7.*

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Page 8 contains a roundup of recent national publicity for research at GTRI, as well as details on new employees.

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Also *on page 8* are the announcements of seven weddings and ten births!

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Pictures of GTRIers at play are *on page 6 and page 8.* Take a peek!

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Happy holidays and a bright new year to all at GTRI and Georgia Tech!

News & Notes

"It's an honor to be nominated by your peers—they're the ones who know what you are doing." — Mike Thomas

Awards

From page 1

standing support to employees in purchasing and supply services; *Cynthia C. Rogers* (Management and Project Support Group), for her attitude, diligence and conscientious dedication to duty in serving the Threat Systems Laboratories at the Cobb County Research Facility.

Outstanding Performance as a Student Employee: *Mark D. Austin* (Concepts Analysis Lab), for his work in Doppler processing, waveform simulation, and digital signal processing; *Bryan N. Duncan* (Materials Science and Technology Lab), for his work in zeolite materials and discovery of the first-ever preparation of an aluminophosphate molecular sieve in the absence of an organic additive; *Timothy A. Hamel* (Aerospace Lab), for work in acoustics dealing with measurements of air flow and noise fluctuations over the surface areas of test automobiles; *William A.J. Shamblin* (Economic Development Lab), for dedication to and consistently high performance in economic development and marketing research projects.

Each recipient received a $500 check, an engraved wall plaque, and a letter of commendation from Dr. Grace. A photograph of each recipient will be displayed all year at the recipient's work location.

Guests at the awards ceremony and reception included Mike Thomas, Demetrius Paris, Dick Fuller, Gary Poehlein, and Jim Langley. As executive vice president of Georgia Tech, Dr. Thomas told the awards nominees: "It's an honor to be nominated by your peers—they're the ones who know what you are doing." ❑

Dr. Marvin Cohen (left) of GTRI poses with Army students in front of an M-1 tank, one of the targets utilized in the radar reflectivity measurement laboratory. (Special Photo)

GTRI conducts "hands-on" smart munitions training course for Army

After several years of effort, a Smart Munitions Training Course developed at GTRI began in August 1991 at the US Army ARDEC, Picatinny Arsenal, New Jersey, and will continue for 15 months. The course is taught on a one-week-per-month basis, emphasizing "hands-on" laboratory and field activities by the students. Course administrators are Mercedes McClelland, Continuing Education Department, and Nick Currie, Radar and Instrumentation Development Laboratory.

The course has been championed by Ted Malgeri of the US Army ARDEC as a method of providing practical sensor design experience for government engineers and scientists. The course, which was created from scratch, is divided into five parts, each three months in length: Basic Radar, Advanced Radar, Millimeter Wave (MMW) Systems, Infrared (IR) Systems, and Smart Munitions. It involves classroom teaching, design problems using Mat Lab© simulation software, radar, MMW, and IR system laboratories, and radio frequency measurement laboratories. The Army will have invested over $500,000 in the course by the time it is completed.

The instructors come from GTRI and other contractors in the Smart Munitions community. GTRI instructors include:

- **Basic Radar:** Coordinator—Nick Currie; Instructors—Joe Bruder, Marvin Cohen, Nick Currie, Jim Kurtz, Jim Scheer, and Bob Trebits
- **Advanced Radar:** Coordinator—Jim Scheer; Instructors—Wayne Cassaday, Jim Echard, Bill Holm, Mark Richards, Jim Scheer, and Mike Tuley
- **MMW Systems:** Coordinator—Ted Lane; Instructors—Nick Currie, Ted Lane, Bob McMilllan, Jim Scheer, and Tracy Wallace
- **IR Systems:** Coordinator—Bill Owens; Instructors—Don Blue, Gary Gimmestad, Bob McMillan, Bill Owens, and Dave Schmieder
- **Smart Munitions Technology:** Coordinator—Sam Piper; Instructors—Charles Brown, Bill Holm, Ted Lane, and Sam Piper.

Currently, RIDL is looking to market the course to other Department of Defense agencies on a whole or partial basis since so much effort has been spent in creating this unique course. ❑

Hodges named ATDC director

H. Wayne Hodges has been appointed director of the Advanced Technology Development Center (ATDC).

He has been serving in a dual capacity as both the acting director of ATDC since May 1990 and as special assistant to the President for economic development.

During his interim period at ATDC, Hodges focused ATDC efforts on evaluating and refining the program and strengthening the center's ties with Georgia Tech and the technology community. In March of this year, he inaugurated the Faculty Research Commercialization Program, which provides initial support to move innovative, technology-based concepts from the lab toward a market-ready product.

As special assistant to the President, Hodges will continue to chair the Georgia Tech Economic Development Council and manage the overall coordination of the Institute's economic development activities. In addition, he serves as liaison to the new Georgia Research Alliance as well as other economic development organizations and agencies. He also was instrumental in the formation of the Georgia Center for Advanced Telecommunications Technology.

Hodges played a key role in helping to develop ATDC during its formative years. He served as associate director of ATDC from 1981 to 1985, assuming responsibility for its overall program management. His accomplishments included the formulation and implementation of ATDC policies and procedures for handling new start-up companies, ATDC organizational staffing, and development of temporary and permanent ATDC facilities.

In 1985, he was named deputy commissioner of the Georgia Department of Industry and Trade, where his major responsibilities included program and budget development and management of the economic development group. The group comprised five divisions involved in international and domestic recruitment, research, marketing and trade development, as well as four international offices.

Hodges is first vice president of the Georgia Industrial Developers Association and is affiliated with the Georgia Rural Development Committee, Industrial Development Research Council, Business Council of Georgia, Business and Technology Alliance, and the Georgia Business Development Corporation.

ATDC was created in 1980 as one of the nation's first university-based business development centers specifically designed to assist new technology businesses. ATDC assists technology entrepreneurs during their early years and provides information and support to existing and relocating technology firms throughout Georgia. ❑

Georgia Tech
RESEARCH INSTITUTE

At a reception honoring newly appointed RIDL Lab Director Evan Chastain, Wayne Cassaday (left) presents Evan with a gift from the lab—a framed color photo of the Tech Tower. (Photo by Anita Edwards)

Barnhart, Chastain appointed lab directors

Following extensive national searches conducted by search committees, Eric Barnhart has been appointed director of the Communications Laboratory (COML), and Evan Chastain has been named director of the Radar and Instrumentation Development Laboratory (RIDL). Both appointments were effective November 1.

Mr. Barnhart has been on the professional staff of GTRI for the past eight years, having previously worked at Martin Marietta for three years. He has served as a branch head, associate division chief, and associate director of COML. He participates in a wide variety of professional and administrative activities, and manages both commercial and military research projects.

Mr. Chastain had extensive technical and management experience in the Air Force prior to joining the GTRI staff. Positions he has held at GTRI include associate division chief, manager of the Special Operations Force Program Office, and interim director of RIDL while the director search was under way. ❑

Going global for business growth

By Lincoln Bates, EDL

"Go Global for Growth" was the message for west Georgia firms at a conference in Columbus November 4 cosponsored by GTRI, Senator Wyche Fowler, Jr., and several state and local economic development groups.

Art Brown of GTRI's Columbus Regional Office played a major role in organizing and orchestrating the meeting. "The conference was designed to educate rural firms about exporting and encourage them to take advantage of export opportunities," he said. Some 80 representatives of area businesses and foreign countries participated, discussing opportunities, successes and difficulties in international trade.

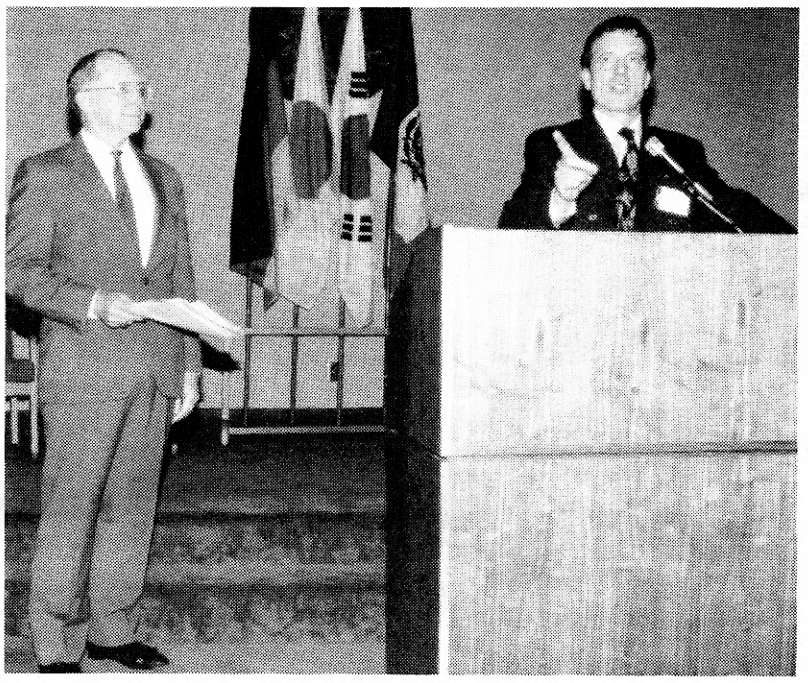
Hans-Jochen Schmidt, German deputy consul general in Atlanta, observed that exports are an 'engine of growth' for the American economy. "Exports are practical and profitable, and they generate jobs," he said, adding that the new European Community trading bloc should be an excellent target for U.S. exports.

In his keynote address, Senator Fowler urged companies to return to the country's traditional strengths of manufacturing and trade. "We can increase our exports in Georgia, and we've got to do it," he said. According to the latest figures from the Georgia Department of Industry, Trade and Tourism, only about 17% of Georgia companies export, and the biggest customer is Canada.

EDL's David Swanson served as moderator of the day-long conference. Bonnie Lann and Lincoln Bates assisted with information aspects, and ESTL's Rae Adams provided photo support. According to Swanson, the concept might bear repeating elsewhere in the state.

Following the presentations and a buffet lunch, various resource organizations, including Georgia Tech's EDA Center, the Columbus Regional Office, and Tech's new Center for International Standards and Quality, made themselves available to field specific questions attendees had about exporting.

GTRI's role in stimulating interest in exports among Georgia policymakers and firms also was highlighted by a recent report by EDL's Bill Riall entitled "Toward Development of an Export Promotion Strategy for Georgia." The research examined other states' efforts in this area and surveyed existing Georgia exporters to determine their needs for assistance. ❑



Speakers at the export conference in Columbus included (from left) EDL Director David Swanson and Hans-Jochen Schmidt, German deputy consul general in Atlanta. (Photo by Rae Adams)

Grace discusses state of GTRI at employee meetings

"It's been a tough year—another year in transition," said GTRI Director Donald Grace at the "GTRI—Present and Future" meetings in October. "But we still have many good things going for us.

"We still have lots of truly fine people, we are respected and appreciated, we have lots of repeat business, and our awards are staying up," he elaborated. "We also hope to work in some new areas. I feel upbeat about our long-range future."

FY91 was a year of growth, despite economic uncertainty, Dr. Grace revealed. He discussed increases in total expenditures and research awards, the growing Department of Defense share of the sponsor mix, and the GTRI employment picture. Statistics comparing FY91 with the previous year are shown in the sidebar box.

Touching on financial problems, Executive Associate Director Bob Shackelford commented: "We will continue to try to convince state government officials that since GTRI is a revenue-generating unit, it deserves operational flexibility."

Other topics included internal research awards by the STGC, the upcoming 26% administrative overhead cap, GTRI's participation in several Georgia Tech-wide initiatives, including the Strategic Plan, the Economic Development Council, and other committee and research interaction. Dr. Grace announced the inauguration of a GTRI Technical Journal under sponsorship of the STGC. He also commented on OOD's deepening involvement in TQM.

The principal part of Dr. Grace's annual address to GTRI employees stressed the many and varied activities and accomplishments of the research labs and support groups. These activities ranged from technical support to Desert Storm (CSIT and RIDL) to development of a missile threat simulator (led by RSAL, but involving eight units, including six labs); from development of a real-time hardware and software-in-the-loop simulator for Army missile systems (HRL) to invention of a new type of microstrip antenna (MATD); and from establishment of a functional security staff at Cobb County (RSD) to personal correspondence with Desert Storm soldiers (SSD).

Dr. Grace ended the formal program with a slide show presenting GTRI employees at work and at play, emphasizing that "our strength, as always, is our people."

Assistant Director Pat O'Hare commented: "These meetings are invaluable to bring employees up to date on what is happening at GTRI and to give them an opportunity to air their concerns. They provide a forum for a wide-ranging exchange of views between all elements of GTRI during the question-and-answer period. We especially appreciate the support of the Tech administration, with Dick Fuller attending one of the meetings and Mike Thomas attending the final meeting to answer budgetary questions." ❑

Vital Statistics

How is GTRI faring? Here are some statistics for FY90 and FY91, and some estimates (as of October 7, 1991) for FY92:

Total Expenditures
- 1990 - $95.8 million
- 1991 - $100.5 million
- 1992 - $102 million (est.)

Research Awards
- 1990 - $88.6 million
- 1991- $98.3 million
- 1992 - $100 million (est.)

Sponsors

Department of Defense:
- 1990 - 80.1%
- 1991 - 82.1%

Other Federal Government:
- 1990 - 4.7%
- 1991 - 4.2%

State & Local Government:
- 1990 - 0.9%
- 1991 - 0.9%

Industry:
- 1990 - 14.3%
- 1991 - 12.8%

Total Employees (June 30)
- 1990 - 1,462
- 1991 - 1,444

"We have lots of truly fine people, we are respected and appreciated, we have lots of repeat business, and our awards are staying up. We also hope to work in some new areas. I feel upbeat about our long-range future."
— Don Grace

Profile & Insight

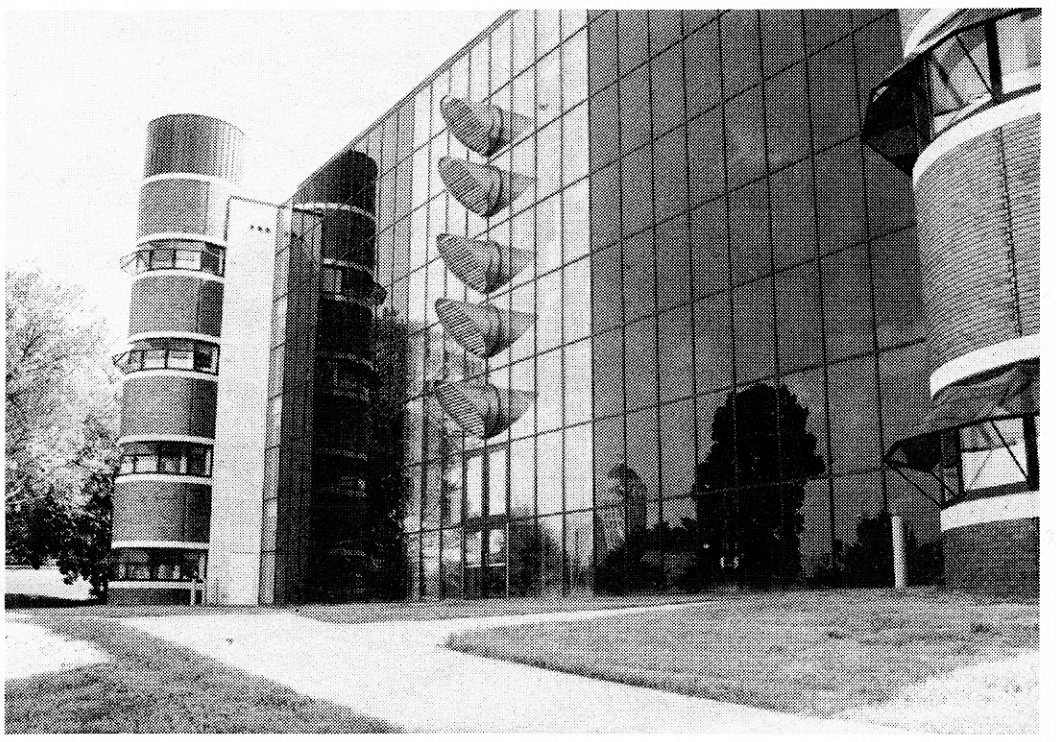
Manufacturing Research Center opens its doors

The Fuller E. Callaway, Jr. Manufacturing Research Center building officially opened for business with a ribbon-cutting ceremony November 8. The four-story, 120,000-square-foot building contains 120 offices and flexible space to arrange as many as 72 laboratories or as few as 24, depending on research requirements. It also contains a three-bay shop area, seven conference rooms, and a 100-seat auditorium.

Designed by Lord-Aeck-Sargent Architects as flexible industrial space, the building on Ferst Drive near Hemphill frankly expresses its industrial function with exposed pipes for hot and chilled water, acid wastes, electricity, and other utilities coded with primary colors and exposed for easy access. Exterior columns are a takeoff on classic Greek columns, with a threaded screw motif, and the ceiling decoration of the auditorium is a set of meshed gears. The high-bay area has catwalks and trenches to facilitate access to utilities when new experiments are set up.

In his remarks before cutting the ribbon, Governor Zell Miller commented: "Manufacturing today requires the brains of a few employees, rather than the backs of many." He also said, "This center will give manufacturers access to the knowledge base of Georgia Tech. It will also give them access to students who are getting experience with cutting-edge technology."

The Manufacturing Research Center is a consortium which pools funds from its member companies to conduct research that will advance state-of-the-art manufacturing technology in areas of shared interest. This leveraging of funds from the five consortium members makes available to each member organization a resource of $1 million per year—five times its own investment—and expands access to related Georgia Tech programs. Current members are Motorola, IBM, the Digital Equipment Corporation, the Ford Motor Company Electronics Division, and the Manufacturing Technology Division of the U.S. Army Missile Command's Research, Development and Engineering Center. By allowing a new technology to be demonstrated in MARC's manufacturing environment prior to production, vendor-level companies associated with the consortium—and graduate-level students who will work on such research projects—will gain new knowledge they can take into the workplace.



The new Manufacturing Research Center. (Photo by Joe Schwartz)

Dr. Michael J. Kelly, director of the Manufacturing Research Center, says the Center encourages cooperation and interaction across a wide range of disciplines at Georgia Tech. It also provides an environment for expanding interaction between scientists and engineers from both the university and industrial sectors. "The Manufacturing Research Center has as one of its major objectives to create an environment for cooperation among people who have technology interests that satisfy both the industrial and the military interests of the country," he notes.

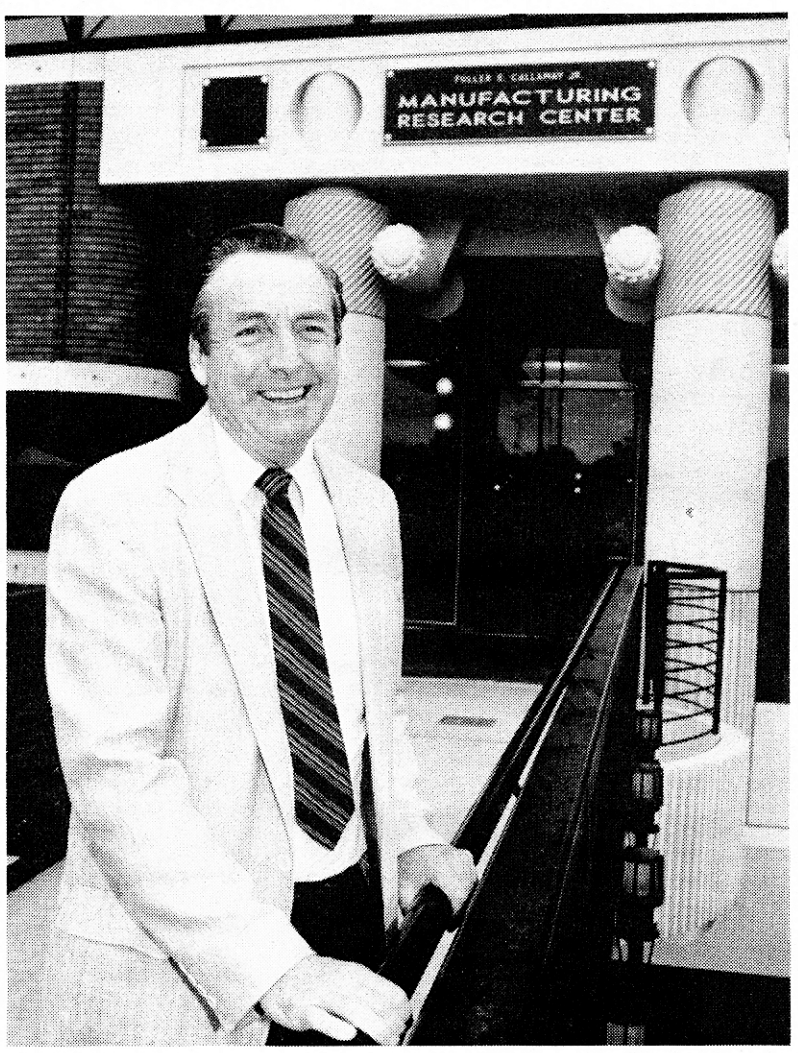
With its broad range of education and research programs, Georgia Tech can provide the resources needed to advance electronics manufacturing in the United States, Kelly points out. By providing a neutral environment open to all the applicable disciplines, the Center can facilitate the cooperation necessary to tackle tough issues, he suggests.

While research is one of the Center's primary goals, Kelly believes the program offers tremendous benefits to industry by educating a new generation of broadly based engineers and scientists who can take a "systems approach" to manufacturing issues.

"One of the major successes of the Manufacturing Research Center will be to produce people who have a broad view of technology, and, as a consequence of working together, can transfer that technology to areas that can benefit from early exploitation," he adds. "I think that Georgia Tech has the potential, more than a lot of other universities, to produce a shift that results in a greater focus on the needs of industry, and in the process, provides improved educational opportunities."

The Manufacturing Research Center was established in 1987 to concentrate interdisciplinary expertise on advanced manufacturing processes for the electronics industry. MARC research projects have already begun in packaging and interconnection technology, materials and processes, and factory systems. The Center's research program will build on other manufacturing-related research and education programs at Georgia Tech. These programs include the Material Handling Research Center (MHRC), the Computer-Integrated Manufacturing System (CIMS) program, and the Microelectronics Research Center.

Occupying office space in the new building are MARC, MHRC, CIMS, and GTRI's Agricultural Technology Program. ❑



MARC Director Mike Kelly welcomes visitors at the entrance to the Manufacturing Research Center building. (Photo by Joe Schwartz)

A vision of revitalized industry

Kelly named director of Manufacturing Research Center

By John Toon, RCO

Dr. Michael J. Kelly has been appointed director of Georgia Tech's Manufacturing Research Center.He brings to his job a wealth of industrial experience—and some concrete ideas on how the United States can revitalize its faltering manufacturing sector.

Before accepting the position at Georgia Tech, Dr. Kelly served as director of the Defense Manufacturing Office within the Defense Advanced Research Projects Agency (DARPA), the high-technology research branch of the U.S. Department of Defense.

He also served as manager of IBM's Manufacturing Technology Center in Boca Raton, Florida, where he began company support for education programs in computer-integrated manufacturing systems (CIMS) at colleges and universities. Georgia Tech initiated such a program in 1982 as a result, and Kelly says the institution's willingness to foster change helped lead him to accept the new position.

"People are more open to change at Georgia Tech, and there is an entrepreneur-

ial spirit not found to the same degree at other institutions," he says. "I think Georgia Tech has an environment that makes change easier —and I think change is needed in the manufacturing community."

The Manufacturing Research Center was established to focus interdisciplinary research expertise on advanced manufacturing technology. The initial research is directed at technologies of interest to its five supporting members: IBM, Digital Equipment Corporation, Motorola, the Ford Motor Company Electronics Division, and the U.S. Army MICOM Manufacturing Technology Division. The Center, established in 1987, officially opened its new 120,000-square foot laboratory and office building on November 8.

Kelly believes the United States can have a healthy manufacturing community through a new spirit of cooperation and increased attention to government research investments in dual-use technology: areas with both military and industrial returns. "The United States absolutely can have a healthy manufacturing sector," he says. "But it will require strong cooperative efforts on the part of industrial sector people, and a different strategy in the investment of government funds."

Nearly half of the $150 billion a year spent on research in the United States goes into projects for the Department of Defense or the federal research laboratories, Kelly notes. "Almost none of that is focused on products that improve our competitiveness," he adds. "There is a major need to exploit technology to enhance the industrial base. There is a further need to strengthen the manufacturing sector to meet global competition."

The United States retains competitive technological strengths in electronics, computer technology, software, telecommunications and other areas. Kelly says manufacturers should capitalize on those strengths to develop products which will meet future needs, such as consumer electronic products which integrate home, business and education applications.

"We are militarily secure today, but we are becoming economically insecure," he warns. "If we don't solve the problem of our eroding industrial base, eventually we will not be militarily secure because our military strategy is to win with technology. If we don't control the technology, we don't have a viable military strategy."

An educated work force is also critical to maintaining the industrial community, and Kelly says universities must help by broadening their engineering programs so graduates can take a systems approach when dealing with manufacturing issues. "If you are going to have quality products, you must have quality people," he adds. "We will not succeed at revitalizing our manufacturing base unless we focus on the education and training of the new people coming into the work force. And since 75% of the people who will be in the work force in the year 2000 are working today, attention must likewise be given to their educational needs."

Universities should encourage increased interaction among different disciplines—and between university and industry researchers, he urges. Such interactions will benefit industry, allowing it to influence goals by providing industrial perspectives to the academic community.

At the Center, Kelly joins Associate Director for Operations J.C. Campbell and Associate Director for Technology Dr. Laura Turbini.

Kelly has served on the faculty of the New Jersey Institute of Technology, Stanford University, the University of Detroit, and Marist College. He holds a B.A. degree from Marist College, a B.E.E. and M.E.E. from Catholic University, and a Doctor of Engineering degree from the University of Detroit.

At DARPA, he was responsible for the semiconductor research consortium Sematech, along with research efforts in high-definition displays, X-ray lithography and other advanced manufacturing equipment, infrared focal plane arrays, and the Microwave and Millimeter Wave Monolithic Integrated Circuits Program. ❑

Researcher views East German radio technology

By Martha Ann Stegar, RCO

Gene Greneker (RIDL) recently got a chance to see the aftereffects of the crumbling of the Berlin Wall while giving a paper at an International Conference on Digital Signal Processing Applications and Technology. He found the contrast between his first glimpse of Berlin during another conference in 1980 and Berlin today startling.

"In 1980, we couldn't go farther than the Berlin Wall on the east and the Spandau area on the west," he said. He remembers attending a cocktail party at the Reichstag a decade ago and seeing an East German guard tower 50 feet away with sentries looking at them with binoculars; today all this is gone.

"While in Berlin in late October, we were able to walk through the former 'no man's land' as if it were a park," he said. "I found the point where I looked over the Wall in 1980—nothing is there today. We walked through the Brandenburg Gate for a couple of miles, past Hitler's bunker (a hill 30 feet high and 50 feet in diameter) and into the former East Germany."

Greneker also took the train that runs between East and West Berlin. He was struck with the contrast between the two halves of the city as they crossed the wall area. "East Berlin is very gray looking," he said. "The buildings are very old and ill-maintained, many still with bullet holes in them. It's almost like the area was frozen in time. The Alexanderplatz area is more modern, but the industrial district was all gray again."

He says many East Germans are out of work: their factories have been closed because they are unsafe, inefficient and unproductive, or need too much modernization and refurbishment to make them competitive.

"On the streets of Berlin, you can buy Russian Army everything from medals to night viewers," Greneker commented. "In Potsdam, I understand that you can even buy a tank."

The conference included a special tour of the radio facilities at Nauen, the site of the birth of shortwave broadcasting, which is located 25 miles west of Berlin, in former East Germany. "The radio engineers we met said that we were the first Americans they had seen in 40 years," Greneker said.

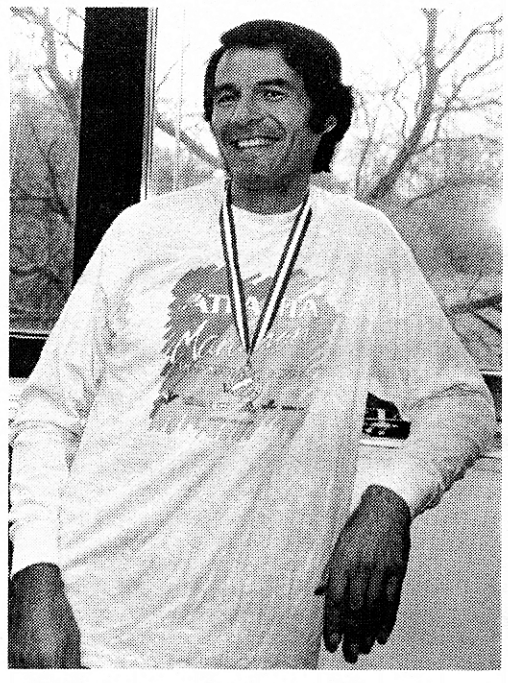
This historic site, dating back to the early 1900s, was a spy station in World War I and a military communications center in World War II. Over the last 30 years, it served as a point-to-point communications station for the USSR, Hungary, Czechoslovakia, and Cuba.

Gene Greneker (second from right) poses with German radio engineers on the front steps of the historic transmitter site at Nauen, Germany, which began commercial point-to-point operation in 1916. (Special photo)

Next door is the former transmitting facility of Radio Berlin International, which corresponded to the Voice of America. Special buildings were constructed to house the two massive 500-kilowatt transmitters, which were built in the USSR and are 150 feet long.

The basic antenna system that was used for routine world coverage was a mile-long curtain built in an S-shaped configuration so that any area of the world could be covered by exciting the proper bay, according to Greneker. "They also showed me an 18-decibel gain antenna that was steerable in both azimuth and elevation and was developed to cover 10 to 30 megahertz—a very large antenna. There's no other antenna like it in the world," Greneker said.

Greneker's conference paper was entitled "The Design of a Low-Cost Microwave Distrometer for Unattended Use in the Measurement of Hydrometeor Number, Size, and Time of Fall in Remote Locations." One of the most novel papers presented at the conference, according to Greneker, was a unique application of digital signal processing to measure the cough, heart and breathing rates of captive fishes as a means to alert officials in Helsinki, Finland, to possible pollution of the city's drinking water. ❑



Phil Kennedy poses in his Atlanta Marathon T-shirt and medal. He collected $600 in pledges to support his research in neural prosthetics, a sum which will be matched by GTRC. Phil ran the 26.2-mile course in 4 hours and 16 minutes. (Photo by M.A. Stegar)

Queries & Quotes

Quality is never an accident; it is always the result of intelligent effort.
— John Ruskin

Focus on Quality

By Bob Shackelford, OOD

To add focus, as well as emphasis, to OOD's commitment and actions for management of GTRI's quality improvement, the Executive Council now meets periodically in sessions dedicated solely to that purpose. We want to share with you some of the thoughts that guide us.

For more than a year now, many of us have been hearing and reading about the multifaceted aspects of TQM. Our lab directors and other managers have been exposed to TQM seminars and workshops which have emphasized the "tools" and procedures that have helped in achieving successes in industrial settings. We also have heard how some of our military sponsors, particularly at Eglin AFB in Florida, are building their own quality programs, focused on fundamentals.

So much has been and can be said about achieving TQM, and about the "tools" and techniques needed for some situations, that we can lose sight of the very simple fundamentals that should guide us. We can unintentionally make something that is straightforward and based on common sense sound forbidding, overwhelming or demotivating.

We believe that it will be both helpful and appropriate to outline the GTRI executive perspectives that undergird our planning and actions for GTRI quality:

➤ GTRI's agenda and our leadership responsibilities have always included the search for improvements and for higher levels of quality and achievement. With TQM, we are adding new levels of focus, priority and commitment as we respond to your feedback, our self-appraisals, and to the research marketplace.

➤ The executive leaders and all managers in GTRI are responsible for guiding and leading us into a management and administrative environment that is hospitable and supportive of all improvement efforts, and that encourages everyone to participate in the processes.

➤ The ingredient of "common sense" must be part of the improvement processes as we designate improvement targets, their priorities, and their allocation of resources in any part or level of our operations. We must apply this ingredient as we examine any aspect of our activities that we control, or are a part of, and as we ask ourselves: Where are we? Where do we want to be? How do we get there? Are our improvement actions paying off and how are we progressing?

➤ OOD will use our existing structures and channels to:
- receive inputs from laboratories and other units or groups,
- send feedback to laboratories and other units or groups,
- address GTRI-wide problems and improvement projects,
- establish priorities for all requests for improvements and assign them to appropriate teams for action.

➤ Laboratories and other units will use their structures and channels to:
- interface with OOD and other units,
- send inputs to OOD,
- receive feedback,
- address in-laboratory or in-unit problems or improvements,
- achieve broad participation by their staff members.

➤ Laboratories and other units will have the latitude and accountability for managing and structuring their own approaches to implement TQM, as long as they observe the fundamentals.

➤ OOD will lead and guide GTRI's ongoing planning functions to encompass and incorporate TQM as part of our strategic and operational plans ❑.

Dialogue Box

*(**Editor's Note:** This month, OCA/Legal answers a question about assignment of copyright.)*

Question: **I'm going to have a paper published. I received some forms from the publisher which must be signed before my paper can be published. What should I do?**

OCA/Legal: Anytime you have a paper or any other material that is going to be published by a professional society, a magazine or other such group, you should contact OCA/Legal at 894-4812 for assistance. Only Georgia Tech can grant a publication the right to publish papers that you produce in the course of your employment at Georgia Tech. Therefore, the permission forms to which you refer should be signed by an individual authorized to sign on behalf of Georgia Tech. Since only a few individuals on campus are authorized to sign agreements on behalf of Georgia Tech, you should send the forms to the Legal Division for review and signature.

It is important for several reasons that you forward the forms to the Legal Division. If you return the form with an unauthorized signature, you effectively give your paper to the publication with no restrictions. When that happens, the publication can use your paper in whatever way it sees fit with no regard as to whether you or Georgia Tech approves of such use.

Secondly, many of the forms provide for the publication to own the copyright on the paper, which means that both you and Georgia Tech can no longer publish or reprint that paper without securing permission from the publication to which the copyright was transferred. In many cases, the result is that Georgia Tech must pay for the right to reproduce a paper that was written by its own employees.

To prevent these situations from occurring, Georgia Tech uses a standard license agreement that grants publishers a nonexclusive license to publish the paper, but retains ownership for Georgia Tech. In the event that the publisher is unwilling to use the Georgia Tech license, OCA/Legal will work out an agreement with the publisher so that your paper can be published. Your help in taking a few precautionary measures in the beginning will result in the publication of your paper and the protection of Georgia Tech's rights in the paper for future publication. ❑

*(**To our readers:** Do you have a question or suggestion for the Dialogue Box? Send it to GTRI Connector, RCO/GTRI 0800 or PROFS MSTEGAR. We will route it to the proper person for action. If it is of general interest, it may be selected for publication. Otherwise, if you include your name, you will receive a personal reply.)*

October Madness: ***Below left, Cobb County staffers Maggi Harrison (AERO, left) and Frances Shifflett (MAPS) led off the historic parade welcoming the Braves home after the World Series as part of WSB Radio's "Tom Tom Brigade." (Photo by Anita Edwards) Below right, O'Keefe MAPS staffers Paulette Clark (left) and Jan Lewis turned their office into a shrine for the Braves. (Photo by Rae Adams)***

Professional Activities

Computer Science & Information Technology Lab

Margaret Ray presented a paper discussing the capabilities of the F-486 workstation and its contribution to Desert Storm at the Automated Mission Planning Symposium July 16-18. **Mark Pellegrini** helped develop the paper.

Charlotte Jacobs-Blecha and **Mark Goetschalckx** (ISyE) jointly wrote and submitted "Vehicle Routing Problem with Backhauls: Properties and Solution Algorithms" for review and publication in *Transportation Science*. The Material Handling Research Center funded this effort.

"The Feasibility of Improving the Marker Making Process" by **Charlotte Jacobs-Blecha** has been accepted for publication as a tutorial paper by the *International Journal of Clothing Science and Technology*.

John Gilmore was the invited chairman at the Neuro-Nimes '91 International Conference in France. He presented "A Neural Network System for Reactive Planning," coauthored by **Andy Czuchry**. In November, he also delivered a paper entitled "Object Recognition Using Neural Networks and High-order Perspective-invariant Relational Descriptions," coauthored by **Ken Miller**, at the SPIE Intelligent Robotic Systems Conference in Boston.

Countermeasures Development Lab

In the October CONNECTOR, **David Flowers** was incorrectly identified as from COML in a reference to delivery of the draft copy of Chapter 23 for the *Aircraft Survivability Handbook*. Sorry, Dave!

Economic Development Lab

Charles Estes made a presentation at the South Carolina Economic Development Coordinators' annual conference October 30-31 in Moncks Corner (SC). He also chaired the Project-of-the-Year Award Committee for the National Association of Management and Technical Assistance Centers and conducted the awards ceremony at NAMTAC's annual conference in early October.

October 25, **Elliot Price** moderated a mini seminar, "The Competitive Edge—Winning the Malcolm Baldrige Award," that was part of a human resource conference at the University of Alabama in Tuscaloosa.

Rick Duke had an article published in the summer 1991 issue of *Economic Development Review*: "Regional Economic Development: The Case of Georgia's Rural Economic Development Initiative."

Early October was "Pike's Peak or Bust" for **Bob Lann**, who spent a rigorous week in Colorado Springs undergoing the intensive Leadership Development Program offered by the Center for Creative Leadership.

Harris Johnson has been nominated vice chairman for the Southeast Region of the Professional Engineers in Government for the term 1992-94.

Sherman Dudley recently spoke at the Valdosta-Lowndes County Chamber of Commerce annual Salute to Industry breakfast attended by some 100 local businessmen.

October 24, **John Adams** and **Chris Downing** (ESTL) made a presentation, "Energy Management Assistance Program for Grade Schools," at the 14th World Energy Engineering Congress in Atlanta.

Electro-Optics Lab

Michael Cathcart and **Albert D. Sheffer, Jr.** had a paper published in the November issue of *Optical Engineering*. It was entitled "Generation and Application of High-Resolution Infrared Computer Imagery."

Gary Gimmestad presented a paper, "Lidar Observations of Mt. Pinatubo Aerosol above Atlanta, Georgia," at a technical meeting on Optical Remote Sensing of the Atmosphere which was held November 19-21 in Williamsburg (VA). Coauthors were **Ed Patterson, Dave Roberts, Susan Gimmestad**, and **Christy Galyean**.

Jim Sowell has been elected to the International Astronomical Union.

Environmental Science & Technology Lab

In mid-November, **John Nemeth, Nancy Davis**, and **Claudia Huff** gave a presentation, "Managing the Dynamics of Change," at a training and technology transfer conference for the Environmental Protection Agency's Hazardous Substance Research Centers.

Steve Hayes was a speaker at "How to Manage Above and Underground Storage Tanks in the 1990s," the 2nd Annual Georgia State Conference sponsored by the National Institute of Storage Tank Management.

Dave Jacobs testified October 17 before the Senate Subcommittee on Housing and Urban Affairs, his remarks focusing on the problem of lead-based paint in the nation's housing stock. He also addressed various features of Senator Alan Cranston's Urgent Lead Paint Hazard Prevention Act. In November, he presented two lectures on lead-based paint to the National Association of Realtors annual convention in Las Vegas.

Charlene Bayer co-chaired a session on methods development at a conference on "Measuring, Understanding and Predicting Exposures in the 21st Century" held in Atlanta November 18-21. She also presented two papers: "The Effect of Ventilation on VOC Exposures in a New Office Building" and "An Assessment of Potential Human Exposures to Volatile Organic Compounds from Use of In-Duct Biostat Coatings." The conference was sponsored by EPA, the Centers for Disease Control, the World Health Organization, International Society of Exposure Analysis, and others.

In October, **Paul Schlumper** gave an OSHA update and safety programs presentation to the Brooks County (GA) Chamber of Commerce Employer Committee. He also spoke on ergonomics at the Textile Industrial Engineering seminar in Forsyth (GA) and gave a presentation on current OSHA regulatory activities at the quarterly division safety meeting for Delta Air Lines.

Governor Zell Miller issued a proclamation declaring November 18-21 as "Construction Safety Week" in Georgia in conjunction with ESTL's Construction Safety Week Conference.

Microwave & Antenna Technology Development Lab

On December 3, at the American Society of Mechanical Engineers Winter Annual Meeting in Atlanta, **Andrew Dugenske** gave a paper, "An Experimental Investigation of a Robust Control Scheme," at a Symposium on Control of Systems with Inexact Dynamic Models. Coauthors were **Y.H. Chen** and **Kok-Meng Lee** (both of ME). The paper was published in the Symposium Proceedings.

Dayton Adams was the lead author and presenter of a paper entitled "Dual Band Frequency Scanned, Height Finder Antenna" at the 21st European Microwave Conference, held in September in Stuttgart, Germany. He attended the CROSSBOW-S Threat Trainer Workshop October 29-31 in Huntsville (AL).

At the AMTA Conference in Boulder (CO) in October, **David Asbell** presented a paper titled "A Tracking Algorithm for Laser-Referenced Field Probe Planarity Control," **John Jones** gave a paper titled "Statistics of Multiple Extraneous Signals on a Compact Range," and **Scott McBride** read a paper on "3D Imaging of a Compact Range by Focusing Field Probe Data."

Office of the Director

Devon Crowe recently had two papers published in *Applied Optics*. "Near-Field Optical Disk Recording for Very High Data Density" appeared in the October 1 issue, and "Role of Photon Statistics in Energy-Efficient Optical Computer" was in the September 10 issue. Coauthors of the second paper were **Joseph Shamir** and **H. John Caulfield**.

Physical Sciences Lab

Mike Harris presented a paper, "Advanced II-V Materials for Microwave and Millimeter Wave Integrated Circuits," at the Second Workshop on Electro-Optical Materials held October 8-9 in Huntsville (AL). Coauthors were **Dave Hughes** and **Abbas Torabi**.

Radar & Instrumentation Development Lab

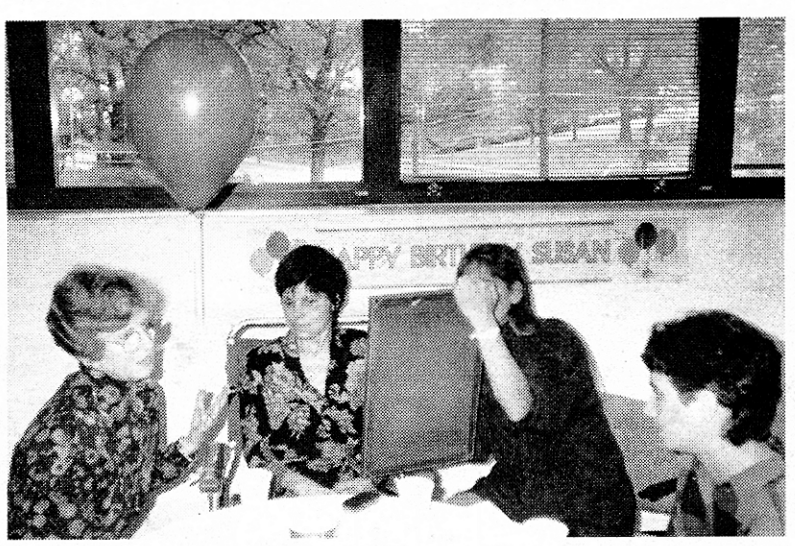
Gene Greneker was plenary session chairman for the IEEE International Carnahan Conference on Security Technology, held in October in Taipei, Taiwan (R.O.C.). The conference, sponsored by the National Chaio Tung University and the Chung Shan Institute of Science and Technology, had more than 250 participants. GTRI was a cooperating sponsor and will host the 26th annual conference in Atlanta next October, with Greneker as conference chairman.

Threat Systems Development Lab

GTRI hosted meetings of two committees of ISO/IEC/JTC1/SC7, an international standards development body concerned with software engineering, November 18-21. **Richard Ivy** (TSDL) is active on both committees; he has served on the Software Engineering Reference Model Committee for the past three years and is chairman of of the Software Classification Committee. ❑

Focus on Folks

A surprise birthday party was held in late November for former GTRI/EOL staffer Susan Wheeler in the CRB Food Court. Shown from left, Connie Mackey, Susan, Leanne Blakeslee, and Ann Hampton. (Photo by M.A. Stegar)



Focus on Folks

More October Madness: Strolling the CCRF campus at Hallowe'en are (left, L-R) Helen Hunton, Alan Williams, Carey Floyd, and Cynthia Rogers, while Faye Carpenter (top left) looks on. Above (top), Lowell Netherton and Mercedes Saghini greet friends at a CRB Hallowe'en lunch and (middle) Valerie Wittenberg pops out of a pumpkin shell, while (bottom, L-R) Wanda Fox and Pat Anderson share a costume. (Photos by Anita Edwards and M.A. Stegar)

GTRI in the news

In the July-September period, GTRI received the following national publicity:

• The first aerial robotics competition, coordinated by Rob Michelson, led to article placements in the *Atlanta Journal and Constitution* (505,000 circulation), *London* (U.K.) *Daily Telegraph* (1,094,680), *Business Week* (975,000), *Computerworld* (135,000), the *Fort Worth Star-Telegram* (250,262), *Washington Technology* (35,000), and *Gwinnett Daily News* (35,000), as well as television reports on Cable News Network, WAGA, WSB, WXIA and WGNX.

• An improved process for measuring the hydroxyl radical in the atmosphere was reported in *Design News* (170,000), *Science* (156,000), and *Environmental Science & Technology* (12,500). The research was done by Fred Eisele, David Tanner, and others in GTRI.

• *Popular Mechanics* (1,623,566) published a short article and photograph of the new microstrip antenna design developed by Vic Tripp and Johnson Wang.

• During August, the *Atlanta Journal-Constitution* carried four articles on Georgia Tech research, including work on a new type of landfill, the lidar observation of aerosols from the Mount Pinatubo volcano (Gary Gimmestad and others), and the proposed telescope array being developed with Georgia State University (Allen Garrison and others). ❑

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Personnel News

Computer Science & Information Technology Lab

Beth Barnett is a new RS I hired to work on the development of the 3.0 version of the FAISS Workstation Baseline Software (FWBS).

George Lee was hired as an RS II to work on the ATLAS Code Synthesizer task of the ATESSE project.

Countermeasures Development Lab

Juan Montanez began work as a GRA November 18.

Signature Technology Lab

RE II **David E. Harris** joined STL November 18. He received his MS and PhD from the University of Missouri at Rolla. His dissertation was on medical image processing, and his specialty is image processing.

Threat Systems Development Lab

In October, TSDL welcomed **Austin H. Blochberger**, information analyst I; **Vickie T. Fennell**, information analyst I; and **Todd B. Johnson,** RE I.

David Camp has transferred to the Advanced Technology Lab. ❑

Personal Notes

Wedding Bells

GTRI had three weddings on November 9: **Janice Porter** (OOD) and **Bill Rogers** (CAL) were married, **Brentis Henderson** (CMDL) was married to Stanley Tolbert, and **Bob McMillan**'s (RIDL) son, Robert Murray McMillan, was married to Ann Love Smith.

In STL, **Michael McKeon** was married to Peggy Knight in August, **Dan Garnett** was married to Kathryn Isaac October 12, and **Vernessia Massey** was married to James Callahan III November 23.

Marsha Braswell (MAPS) was married December 2 to David Barton.

Cradle Roll

Margaret Ray (CSITL) and her husband, Larry, have a new baby girl, Teresa Claire, born November 7.

In ESML, **Kim Cole** and his wife, Cindy, had a daughter, Erin Victoria, November 25, and **Walter Addison** and his wife, Cathy, had a son, John, December 3.

Darlene Grosch (CMDL) gave birth to a girl, Erin Renee, December 2.

In EOL, Leslie and **Jim Beletic** had a girl, Elise Juliet, November 16, and Janet and **Larry Corbett** had a girl, Amanda Lynn, November 22.

Proud grandparents are **Jerry Lett** (MAPS), whose daughter had a boy, Bryce Austin Anderson, December 6, and **Evan Chastain** (RIDL), whose daughter gave birth to James Evan Kirby October 30.

Joyce and **Chris Fowler** (ESML) had a boy, Michael James, October 16.

Michael Minardi (CMDL) and his wife, Laurie McGowan, were pleasantly surprised October 6 at the arrival of twin daughters, Dianne Michelle and Kellyann Kathleen.

Sick Bay

Ed Reedy (OOD) had emergency surgery November 23 for diverticulitis and is recovering at home until January. ❑