the GTRI connector
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Electromagnetic Test Facility Starts Tests in December

Part of GTRI's giant new Electromagnetic Test Facility (EMTF) will become operational in December. The first tests will involve measurements of antennas mounted on a military vehicle, using the 100-ton capacity turntable.

On a crisp, windy day in early November, your *Connector* staff visited the EMTF site in Cobb County to view the progress on phase one of the facility: the far-field antenna range and the turntable radar cross section (RCS) range. The 90-foot source tower was virtually complete, with stairs and floors installed. A huge mobile crane was on site to lift the 25-foot crane that will be a permanent part of the installation to its resting place on top of the tower. This crane will be able to lift up to 1,000 pounds. A control/equipment building will be at ground level beneath the tower.

The turntable is complete except for the concrete approach ramp and installation of the hydraulic power pack for the two large hydraulic motors. An equipment hoist for the RCS range that will enable radars to "look" at the turntable from different elevation angles is being manufactured in Sweden and should be ready to install in January. The 40-foot receive tower base also has been erected, and a 20-foot, two-story building will be placed atop it as soon as funds become available.

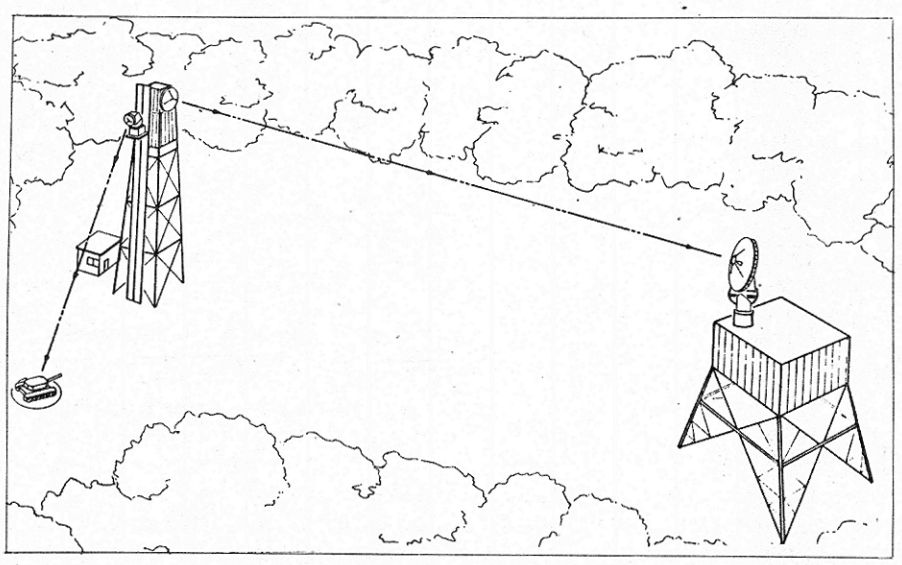
Future development plans include a 500-foot scale-model RCS range (for which a site has already been graded), a rooftop laboratory/propagation range (in design), and a full-scale ground plane range.

The range towers and the turntable have been built with components of a 131-foot NASA windmill tower donated to Georgia Tech by Allen McNeill, a North Carolina textile manufacturer. The massiveness of the structural components, valued at $1 million, provide the towers with exceptional stability and rigidity that will enable precision measurements at frequencies through the millimeter-wave region.

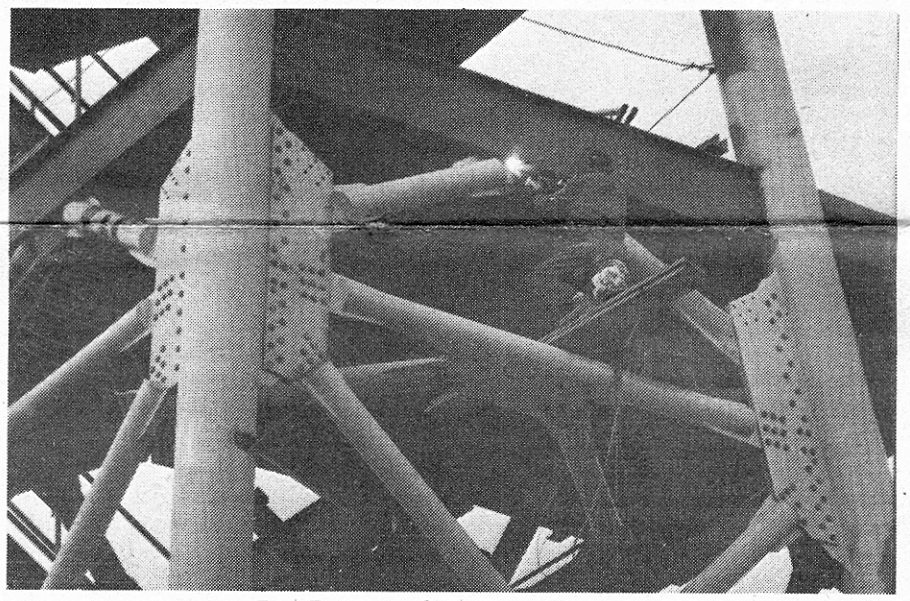
Construction of phase one of the EMTF was funded jointly by the Georgia Scientific and Technical Research Foundation (GSTRF) and GTRC, which have provided more than $1.5 million so far. Howard Atkinson, head of the Antenna Measurements Branch of the Systems and Techniques Laboratory (STL), oversees construction and operation of the ranges.

"The new facility is considered unique because of the combination at one site of the heavyweight turntable, multiple test ranges, and stable towers," Atkinson said. "Another asset is that we not only have the facilities, but we also have the expertise and engineering support. You can

See "Test," page 2



This diagram of the electromagnetic test facility shows two tests being conducted simultaneously. On the far-field antenna range, a signal is beamed from the source tower (left) to the receive tower (right). At the same time, a tank is being rotated on the turntable (lower left) while RCS measurements are being taken by a radar on the platform elevator. (Drawing by STL Design Services)



At the Electromagnetic Test Facility in Cobb County, a workman spot welds while perched nearly 60 feet up on the massive source tower. (Photo by Charles Haynes)

Long-Range Plan Shows Results

Long-range plans are a popular exercise in organizational circles, but are they more than just that—an exercise? What about GTRI's long-range plan? Is it being implemented? What impact has it had on GTRI?

A GTRI department head raised these questions at a recent meeting. To get the answers, the *Connector* editor interviewed three of the GTRI associate directors—Jerry Carey, Bob Shackelford, and Jim Wiltse—for feedback on the two-volume plan published in April of this year for the period 1986-1990.

Objectives of the Plan

Quality is a dominant theme: quality of staff, research programs, and management. "Rather than identifying growth in size as a primary objective, we expect it to be one of the consequences of success in meeting our quality goals," the plan states. "Achievement of these goals also will help open new doors of opportunity and recognition for Georgia Tech's total contribution as a leading university."

The plan sets forth quality goals in the areas of technological thrusts, fiscal programs, initiatives within the university/state organization, GTRI automation program, research quality assessment, space requirements, organization, and administration.

To quote the plan again: "Quality objectives will not come without paying the price of significant resource investments. A major challenge will be faced in meeting the demands for maintaining and building our equipment and facility base at the same time that we are investing in quality research faculty and quality research programs. More than ever, innovative approaches will be required to provide the resources needed to support programs and to attract and hold outstanding research faculty members."

Results to Date

To meet these objectives, GTRI management already has moved to adapt and strengthen GTRI's organizational structure, to encourage a more integrated approach to research with cooperative multi-laboratory efforts, and to make every equipment dollar count by the sharing of equipment and other resources. The goal is to sharply focus GTRI's technological capabilities and thrusts, providing an integrated and flexible response to the client's needs.

"This is important not only in terms of improving the quality

See "Plan," page 2

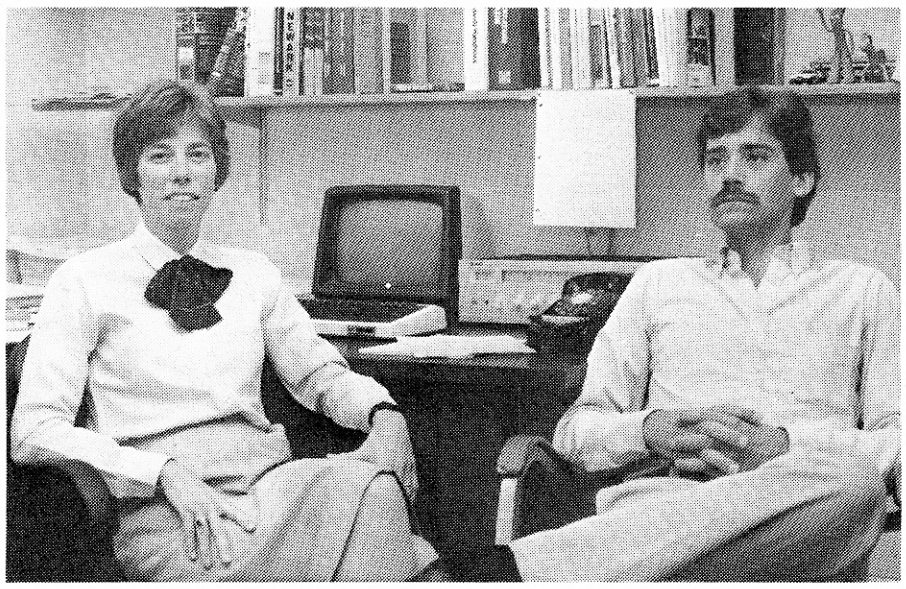
CTAD Develops Expert System for Architectural Firm

By Linda Martinson, ECSL

A tedious but critical part of an architect's job is the preparation of building specifications. These specifications document the architect's design decisions related to the quality of materials and workmanship and are written for the building contractor's reference. The format of building specifications is standardized and exhaustive, that is, complete descriptive information is included in every set.

Heery and Heery, Architects and Engineers, Inc., has designed a prototype software system that greatly simplifies specifications writing and has contracted with the Electronics and Computer Systems Lab (ECSL) to develop its concept to production standards. Eric Wimer and I, both of ECSL's Computer Technology and Applications Division (CTAD), are developing the system for Heery.

Heery's software package is an example of an expert system, an artificial intelligence (AI) concept. An expert system contains a knowledge base of specialized expertise in a combination of both facts and heuristics. (The latter are private, little-discussed rules of good judgment, plausible reasoning, and good guessing.) The quasi-expert user queries the system and receives clever answers that go beyond simple statements of fact because they are based on expert knowledge provoking logical inferences.



Linda Martinson and Eric Wimer pause while planning their work on a software package to help architects write specifications. (Photo by Patricia Stone)

The system ECSL is developing for Heery consists of two cooperating software programs: one used by an expert specifications writer to develop the software query sequences and one used by an architect to prepare building specifications section by section. With the expert system, an architect at a personal computer can produce accurate, fully documented specifications by responding to program queries. The queries emulate an experienced writer by causing the irrelevant parts of the exhaustive data base to be skipped. The architect/user can skip questions and provide incomplete or uncertain data—in other words, interact with the program as with a human consultant.

Difficult problems are becoming increasingly amenable to computer solutions, a trend that will continue as AI technology develops. The Heery project is an example of the wide range of computer applications being developed at CTAD, ranging from technical writing and project management to monitoring and controlling nuclear reactors.

Plan (from page 1)

of our research," Carey said, "but in order to meet the increasing competition in the marketplace. Rather than small programs, the customer now is looking for larger and more integrated programs. Our sponsors don't see us as seven distinct laboratories," he explained. "They look at us as one institution."

A prime example is SDI. Every lab but EDL is involved in this broad-ranging program, with OOD serving as the focal point. This is one of the highest priority investment opportunities identified in the long-range plan, and GTRI already has allocated more than $100,000 to fund a program office in OOD.

Cooperative Research Thrusts

The long-range plan is having a large impact on GTRI's technological thrusts. "In our study, we found that the amount of equipment available per researcher was on a downward trend," Carey said. "We decided to ask for GTRC funds and GSTRF bond money to reverse that trend, but first we had to determine our research priorities."

Independent assessment by each lab and by OOD during the long-range planning process resulted in a list of ten highest priority investment opportunities, all but one of which reached across laboratory boundaries. Multilab equipment allocation committees were formed in several of these areas to decide what programs and equipment should be funded, based on opportunities for sponsored programs.

GTRI prioritized and submitted seven proposals to the GTRC Equipment Fund. Three are being funded for a total of $1.2 million: artificial intelligence, environmental health sciences research, and electromagnetic signature analysis and reduction research (low observables).

"This year, rather than take the money we were awarded and distribute it over 10 to 15 areas where everybody gets a little bit, we decided to give a good chunk to a small number of areas where it will really make a difference," Shackelford observed.

"We feel this approach is a good model for the future," he added. "We're trying to look at technology areas that involve more than one lab, to make personnel in the various labs more aware of each other and what they're doing—to encourage them to work together and not as rivals."

"We've already eliminated the separation between the electronics and resources labs. And we're pleased with the results of the interlab equipment committees. This approach has been fairly successful—it has broken down some of the barriers," Wiltse said.

"We don't want to kill the entrepreneurial spirit that has made us what we are today. But we do want the lab directors to feel like they're part of the GTRI corporate management team. Where appropriate, in program areas like SDI and AI, we're going to insist on cooperative multilab efforts and drive them from OOD," Shackelford added.

Organization

"In terms of organizational structure," Carey pointed out, "the long-range plan helped us take a hard look at one lab and make some tough decisions. We found that while it was doing quality work in some areas, the funding base was decaying in some of its traditional research areas. We were able to integrate its viable efforts with other labs and do away with one overhead support base."

"This points up that from time to time we have to look at our organization, see how our programs are relating to the outside world, and change with it," Shackleford added. "In the future, we'd like to see a more flexible organization at the lab level where we could do some shifting around and recombinations to track the marketplace without the trauma of having to formally disband a lab."

"The long-range plan is not simply a piece of paper, but a process," Carey said. "The submission by each lab of plans for review by OOD and by other labs provided the basis for much more important decisions. Without the long-range plan, we'd still be doing business by the seat of our pants."

"And it's not a rigid plan," Wiltse cautioned. "As time goes by, our objectives will change. Each year we'll look at it to see what we've accomplished and where it needs updating."

(Discussion of the long-range plan and its implementation will continue in the next issue of the *Connector.)*

Test (from page 1)

rent ranges elsewhere, but they often lack technical support. We can do the analysis work for our clients as well."

Not only will the EMTF be useful for a number of upcoming and prospective projects in several GTRI laboratories, but outside clients already are showing interest in renting the facility for their own tests. GTRI is implementing a strong marketing effort, advertising the EMTF as a state-of-the-art measurement/test complex for precision antenna measurements, radar cross section measurements, signature measurements, and propagation studies. "Once people know the ranges are here, they will come up with uses we haven't even thought of," Atkinson said.

Persons interested in operational information on the EMTF should contact Pat Burns, chief of STL's Microwave Systems Division, or Neal Alexander, Special Projects Office manager in the Radar and Instrumentation Laboratory.

PROFESSIONAL ACTIVITIES

ECONOMIC DEVELOPMENT LAB

Southeastern TAAC Director **Bob Springfield** recently appeared on some 15 radio and television talk shows from Jackson (MS) to Charlotte (NC) to discuss trade issues and the role of trade adjustment assistance.

The Atlanta Journal ran an article on TAAC operations in late October, based on an interview with **Charles Estes.**

Phil Loveless, director of the Gainesville Regional Office, was featured in a Sunday edition of the Gainesville (GA) *Times.*

Industrial hygienists **Paul Middendorf** and **David Jacobs** were cited in an October *Science News* story on potential hazards of nitrous oxide to dentists and dental technicians.

Bill Darley and **Sherman Dudley,** directors of the Rome and Douglas offices, respectively, have been designated Certified Industrial/Economic Developers by the American Economic Development Council.

Keith Nelms coauthored, with Alan L. Porter (ISyE), "EFTE: An Interactive Delphi Method," which appeared in a recent issue of *Technology Forecasting and Social Change.*

William Spain has accepted a term as technical editor of the *National Asbestos Council Journal.* He and **Bill Ewing** have signed a publishing contract for a book on asbestos; **Eva Clay, Mark Demyanek,** and **Mike Lowish** are writing chapters.

On October 17, **Charles Duke** made a presentation, "Productivity—It's a Personal Matter," to a National Management Assn. meeting in Tennessee.

In October, **Ken Kucera** spoke on trade adjustment assistance to Metrolina World Trade Association in Charlotte (NC) and the Industrial Management Council of Pickens (SC).

Carol Aton gave a presentation, "The P's and Q's of Job Interviewing," to the student chapter of the Society of Women Engineers in early November.

On November 5, **Marty Melton** addressed Civil Engineering graduate students in the Construction Management Program on how safety and health issues affect the construction industry.

Ken Johnson has been invited to serve on the American National Standards institute (ANSI) Free-Standing Committee on Fall Safety.

In mid-November, **Art Brown** returned from a six-week stint in Sudan.

ELECTROMAGNETICS LAB

A paper by **Dave Schmieder** entitled "Empirical Television Sensor Performance Model" appeared in the September / October issue of *Optical Engineering.*

John Gilmore is coauthor of an article, "Expert System Control of Autonomous Vehicle System," in the October issue of the *Unmanned Systems Journal.*

T.S. Srivatsan recently made the following presentations: "The Influence of Microstructure on the Fractography of Fatigue Cracking of a High Strength Aluminum Alloy," International Metallographic Society, Denver (CO), July 23-25; "The Effect of Material Heterogeneity and Random Loading on the Mechanics of Fatigue Crack Growth," ASME Design Engineering Symposium, Cincinnati (OH), September 12-15; "Random Difference Equations and Spectral Estimation," Fourth International Conference on Signal Processing, October 28-30.

At the Producibility of Microwave and Millimeter Integrated Circuits Conference, sponsored by the U.S. Army Missile Command in Huntsville (AL) November 5-6, **Billy Livesay** and **Mike Harris** presented a paper on "Environmental Interactions Leading to the Degradation of Integrated Circuit Materials," **John Cotton** and **Jim Gallagher** presented a paper on "DOD Needs for Measurement Standard," and **Walter Cox** chaired the Reliability Physics and Environmental Effects Session.

On September 13, **Billy Livesay** presented a seminar on "The Mechanical Behavior of Epoxy Bonds and Fibers" at AMP, Inc. in Harrisburg (PA). The seminar was based on data obtained during an investigation conducted under contract with AMP. **Kyle Moody** and **Al McSweeney** contributed to this work.

Also in September, Livesay presented a tutorial, "Defect Related Failure Mechanisms in Electronic Materials Accelerated During Environmental Stress Screening," at the National Conference and Workshop on Environmental Stress Screening of Electronic Parts in San Jose (CA). He also served on the Technical Working Group which developed the document, *Environmental Stress Screening Guidelines for Parts,* published by the Institute of Environmental Sciences.

At the International Symposium for Testing and Failure Analysis in Long Beach (CA) in October, Livesay prsented a paper, coauthored by **Dawn Maguire** and **Sri Srivatsan,** on "The Effect of Humidity and Electric Current on the Fatigue Behavior of Aluminum Microcircuit Bond Wires."

ELECTRONICS & COMPUTER SYSTEMS LAB

Bob Rice participated in the Communications Vulnerability Assessment Workshop sponsored by Rome Air Development Center at Syracuse University's CASE Institute October 7-10. He and **Eric Barnhart** coauthored a paper, "An Examination of the LPI Characteristics of an EHF Air-to-Air Communications System," which was presented by Barnhart at the 1985 Military Communications Conference held in Boston October 21-23.

Georgia Tech's EDA University Center Program, directed by Art Brown (EDL-left), was a double winner in the 1985 National Association of Management and Technical Assistance Centers' Project of the Year Awards. The program earned second place in the economic development category for assisting a new Ashburn company that will manufacture pecan harvesters. Its third place award in technology transfer represented help in productivity improvement for a wood trophy manufacturer at Ellijay. John Mills (center), director of the Columbus Regional Office, worked on the Ashburn project, and Bill Darley (right), director of the Rome Regional Office, assisted the Ellijay firm.

ENERGY & MATERIALS SCIENCES LAB

At the DARPA/Army-sponsored Symposium on Self-Propagating High Temperature Synthesis, held October 21-23, **Kathryn Logan** and **William Stuart McLemore** presented a paper titled "Differential Thermal Analysis of the $TiO_2 + B_2O_3 +$ Al Thermite System."

Articles by **Dan O'Neil** appear in current issues of two refereed journals: "Rheology and Mass/Heat Transfer Aspects of Anaerobic Reactor Design" in the international journal *Biomass* and "Newtonian Behavior Transition During Anaerobic Fermentation" in Part A. Environmental Science and Engineering of the *Journal of Environmental Science and Health.* O'Neil presented a program review at the Hazardous Waste Environmental Research Laboratory, USEPA, in Cincinnati on October 21 and participated in the High Temperature Composites Workshop at Wright Patterson AFB on October 22-23.

Jim Knight presented a paper on "Entrained Flow Pyrolysis of Biomass," coauthored with **Ray Kovac, Chris Newman,** and **Charles Gorton,** at the DOE Biomass Thermochemical Conversion Contractors' Meeting held in Minneapolis October 15-16.

OFFICE OF DIRECTOR

Bob Cassanova discussed aspects of the Strategic Defense Initiative during several TV appearances in November. On November 4, he was a guest on Metrochannel 13's "Atlanta Tonight" and was interviewed on WAGA's 11:00 News. A taped interview was shown on Augusta's WJBT-TV November 11.

Jim Wiltse presented a paper entitled "Future Millimeter-Wave Communications Systems" at the 1985 Military Communications Conference in Boston October 21-23.

RADAR & INSTRUMENTATION LAB

At the Microcircuit Applications Conference in Orlando (FL) November 5, **Rob Michelson** delivered a paper entitled "Tactical Submersible Display Compression Through the Use of Multimode Microcircuitry."

Phillip Moore gave a paper entitled "Coherent 95 GHz High Power Imaging Radar" at the 11th DARPA Strategic Systems Symposium held October 22-25 at the Naval Post-Graduate School in Monterey (CA).

Approximately 100 attendees participated in the "Principles of Modern Radar" short course November 4-8. This unique and extremely popular course incorporates both lecture and hands-on laboratory experience to give the participant a well-rounded exposure to radar engineering. **Jerry Eaves** has done an outstanding job of organizing and coordinating this course for more than a decade.

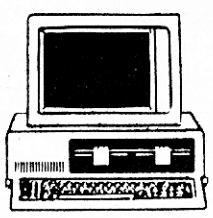
SYSTEMS & TECHNIQUES LAB

Henry Cotten, Connie Greene, and **Doug O'Neil** attended the Antenna Measurement Techniques Association Conference in Melbourne (FL) October 28-30. Cotten presented a paper entitled "Automated Data Analysis Acquisition and System Upgrade," coauthored with Green, **Rob Gault, John Estes,** and **Don Harrison.** He also gave a paper on GTRI's new antenna range and RCS measurement facility; coauthors were **Pat Burns, Neal Alexander,** and **Nick Currie.** O'Neil presented a paper on "Alternative Sampling Techniques for More Efficient Planar Near-Field Measurement," coauthored with **Larry Corey.**

SYSTEMS ENGINEERING LAB

Joe Harrison, manager of the Eglin Field Office, recently was elected a regional director.

Congratulations to **Scott Petty,** who received his MSIM; to **Dan Murphy,** MS Applied Statistics; and to **Doug Ayerst,** MSEE.



Software Review

by Pat Mathiasmeier, RSTF

The Research Software Training Facility (RSTF) offers courses on PROFS (IBM Professional Office System), a communication program designed to make handling information such as letters, notes, memos, messages and personal calendar schedules more productive. Courses are offered every Friday morning from 10:00 to 12:00. Available each month are Beginning PROFS, PROFS Scheduling, and Advanced PROFS.

In the **Beginning PROFS** class, students learn to sign on to the system and to send and receive notes and messages. Other topics include forwarding, resending, printing and replying to notes, and processing the note log.

In the **PROFS Scheduling** class, students learn to keep their personal schedules, look at and change other schedules, and set up meetings with multiple PROFS users.

Advanced PROFS topics include PROFS commands, uploading non-PROFS files, and downloading PROFS files to the PC.

Dates and times of the regularly scheduled RSTF courses are listed in the *Connector* and also are available electronically on PROFS. More advanced Symphony, 1-2-3, and other courses will be offered on demand of a class of four or more persons. These courses may be made application specific to solve significant and real tasks encountered by the Georgia Tech community. Additional courses under consideration at this time include:

- Graphics on Your PC—Beyond 1-2-3
- Small Database Solutions to Many of Your Scientific and Business Problems (based on 1-2-3, Symphony, dBASE II & III)
- DisplayWrite 3

Training Schedule

Videoshow (9-12): Dec. 5.
DisplayWrite 3 (1:30-4:30): Dec. 11.
Survey of Communication Software (1:30-4:30): Dec. 5.
Computer Literacy (9-4:30): Dec. 3, 19.
Beginning Symphony (9-4:30): Dec. 4.
Symphony Spreadsheet (1:30-4:30): Dec. 12.
Beginning PROFS (10-12): Dec. 6.
Beginning DOS (9-12:30): Dec. 9, 11.
Advanced DOS (1:30-4:30): Dec. 9.
Beginning dBASE II (9:30-4:30): Dec. 10.
Beginning Lotus 1-2-3 (9-4:30): Dec. 2.
Advanced 1-2-3 (9-4:30): Dec. 13.
Beginning Wordstar (1:30-4:30): Dec. 6.
Volkswriter (9-12): Dec. 12.
"C" Programming Language (9-4:30): Dec. 16-18.

Call 6202 to sign up for classes.

NEWS BRIEFS

OCA Has New Asso. Director

Captain (U. S. Navy-Retired) Ronald M. Bell has joined the Office of Contract Administration as an associate director. He has more than 20 years of experience as a Navy Supply Corps officer, most recently serving as Commanding Officer of the Navy Supply Corps School in Athens, Georgia. His broad experience includes logistics support, procurement, contract administration, project management, and financial planning. GTRI welcomes him.

Gehl Hosts Radio Show

John Gehl, acting director of the Office of Computing Services, is now hosting a weekly radio talk show about computers. Broadcast live each Sunday from 4 to 6 p.m. on WCNN (68 AM), the show features guests from Georgia Tech, GTRI and industry, and listeners may call in. The December schedule is:

Dec. 8: Jerry Day, Dean, College of Management

Dec. 15: Al Sheppard, Associate Vice President for Research

Dec. 22: Ray Miller, Director, School of Information & Computer Science

PERSONNEL NEWS

ECONOMIC DEVELOPMENT LAB

Bill Whitworth, a former training manager at Southern Bell, is the new head of Industrial Education.

Tim Beck, a Tech alumnus and former engineer at Square D Co., has joined IED's Industrial Energy Group.

The Environmental, Health, and Safety Division welcomes **David Hogue,** RS I, to the Asbestos Program Group; **James Bell,** equipment technician, to the Industrial Hygiene Branch; **Rodney Cannon,** electronics technician, to the Engineering Technology Branch; and Senior Secretary **Carol Keighron.**

Robert Hawkins has left IED to join Tech's Corporate Liaison Office.

ELECTROMAGNETICS LAB

Robert Hyde has been appointed associate chief of the Electro-Optics Division. EOD also has a new senior secretary, **Ruth Kozakoff.**

ELECTRONICS & COMPUTER SYSTEMS LAB

William Joye has transferred from the Computer Related Services Department to ECSL's Computer Technology & Applications Division. He holds a BEE from Georgia Tech and is an RE I.

Kathy Addison has transferred from SEL to ECSL's Communications Systems Division. Her MSEE is from Georgia Tech, and she is an RE I.

Keith Johnson is a new RE II who will assist Dr. John Meadors on his senior investigator program. He is expected to be a major contributor to programs in infrared and electro-optical signature suppression and multispectral signature suppression. He previously worked at Global Analytics in San Diego, and has experience with General Dynamics / Convair and Lawrence Livermore Laboratory.

Joining the Command & Control Division is RE II **Gerald Owens,** who will work on support systems development and command and control. He has master's degrees in nuclear engineering and computer science from the University of Arizona.

ECSL welcomes new student employees **Kim Toatley** and **Terri Burkett,** ODL; **Glen Brown** and **Michael Gould,** CSD; **George Wells, Steve Duffield,** and **Stephen Friedl,** ECD; **Larry Adams,** CCD; **Michael Jones,** CTAD; **George Cawthon, Carl White, Edward Cerbone, Raul Pino, Glen Johnson, John Thomas, Mark Jarvis,** and **Brian Anderson,** EED.

MECHANICAL SERVICES DEPARTMENT

MSD welcomes a new machinist, **Arthur Schoenfeld.**

OFFICE OF DIRECTOR

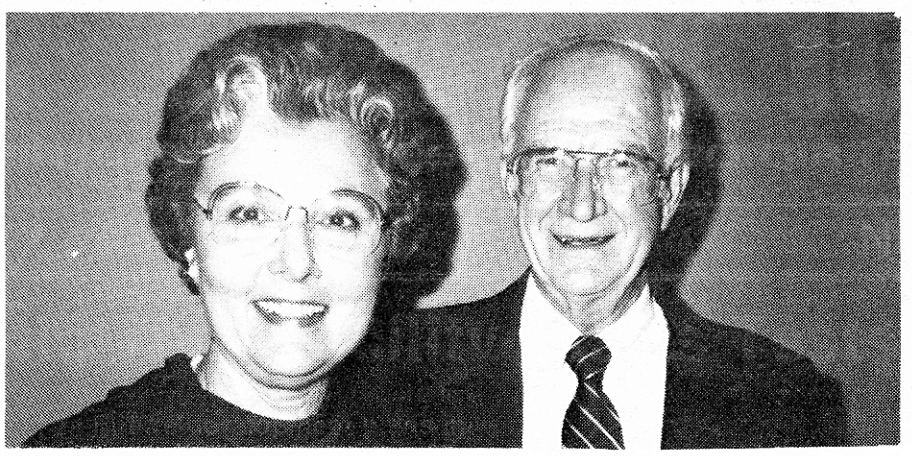
Welcome to **Gail Hughey,** the new secretary/receptionist for OOD.

Cynthia McCree has transferred to the Alumni Association office, where she is secretary to the director.

RADAR & INSTRUMENTATION LAB

RAIL recently completed its move into Building 4 at CCRF. In concert with the move, the Technology Development Division established four branches, locating three in Building 4 and the fourth in Building 5. They are:

Radar Technology Branch: Clark Butterworth, head; 424-9623



Jim Knight retired October 31 after 35 years at Georgia Tech—nine of them as a chemistry professor and 26 as an outstanding researcher at EES/GTRI. A principal research scientist in EMSL, Dr. Knight was involved since 1969 in the pyrolysis of lignocellulosic and cellulosic residues, agricultural and forestry residues, and industrial wastes to useful fuels and chemicals. He is coauthor of a patent on the Georgia Tech entrained pyrolysis/gasification process and has 82 major publications to his credit. The photo captures Jim and his wife, Marion, at a happy moment during the farewell luncheon given by his friends in EMSL. (Photo by Everett Chapman)

Instrumentation Technology Branch: Rob Michelson, head; 424-9633

RCS Techniques Branch: Evan Chastain, head; 424-9636

Systems Development Branch: Ted Lane, head; 424-9667

SYSTEMS & TECHNIQUES LAB

Don Harrison has resigned from the Microwave Systems Division.

SYSTEMS ENGINEERING LAB

The Defense Systems Division welcomes **Douglas Moreland,** formerly a senior engineer with Westinghouse Electric. His MS in computer science is from the University of Pittsburgh. Also in DSD, **Daniel Duvarney** is a new GRA, currently pursuing his MS in ICS.

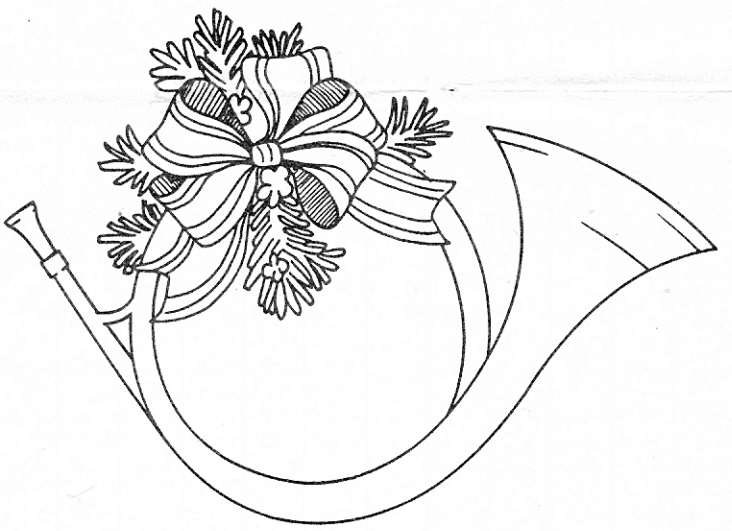
Zachary Bergon has joined the Countermeasures Development Division as an RS I. He recently completed his MS in physics at the University of Colorado. **Jimmy Thomas** has resigned.

Linda Housworth has joined the Concepts Analysis Division as a clerk. **Craig McDaniel** has resigned his GRA position, and Co-op **Bill Persyn** has transferred to the Computer Related Services Department.

Eddie Parker has been promoted to full-time systems analyst.

Arline Farmer (Techniques Analysis) and **Bob Crawford** (Eglin) resigned.

YOU'RE INVITED



GTRI will hold one Christmas party this year—at an off-campus location. The party will be held on Thursday, December 12, from 3 to 5 p.m. at the Radisson Inn, located at I-75 and Howell Mill Road. GTRI will provide food and soft drinks. Beer and wine will be available on a cash bar basis. Deejay Al Gay will play your requests. There'll be door prizes, too! See you there!

PERSONAL NOTES

EDL: Congratulations to **Chuck Calmbacher,** who got married in October.

ECSL: Celeste and **Bill Gaylord** welcomed a son, Benjamin Nathaniel, September 29.

Wedding bells rang October 12 for **Anita Hamelynck** and Kevin MacDonald, and on November 2 for **Stewart Stanbro** and Leah Amobeo.

Best wishes to **Janice Davis** for her recovery from a recent illness.

Congratulations to **Linda Martinson,** who competed in the Spartanburg (SC) Triathlon on September 21 and placed first in her age group! She had to swim .75 mile, ride a bicycle for 20 miles, and run 6.2 miles to accomplish this goal.

EMSL: Les Henton is recuperating at home from a hospital stay.

FMD: Tom Jones was married to Betty Clauson on November 8.

MSD: Earl and **Candice Martin** have a baby girl, Kristine Melanie, born September 11.

RAIL: Nick Currie recently found his "stolen" car exactly where he parked it at Hartsfield Airport.

SSD: Martha Miller became the bride of Gary Farley September 28.

SEL: Best wishes to **Sandra Bradley,** who was married to Dale Dixon September 28, and to **Debra Duffield,** who was wedded to Scott Jordan October 26. **Bill Kuhn** and Ann Morgan also were united in marriage on September 28.

Jan and **Doug Ayerst** are proud parents of Rebecca Louise, who arrived October 15.

Continuing Education Calendar

Health & Safety: (For information, call Ann Harbert, EDL, ext. 3806)
Dec. 10. **Safety Workshop on Repetitive Motion and Back Injuries in the Meat and Poultry Industries.**
Dec. 10-13. **Supervision of Asbestos Abatement Projects.**
Jan. 14. **Hazardous Waste: Generators, Transporters and Site Safety.**
Jan. 30. **Asbestos Abatement Workshop.**
Jan. 31. **Asbestos Awareness Seminar.**
Feb. 11-13. **Hazardous Waste Annual Conference.**

Electronics: (Administrators: Al Sheppard, VPR, ext. 4826, and Jim Wiltse, GTRI/OOD, ext. 3494)
Jan. 27-29. **Millimeter Wave Systems and Technology.**
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Feb. 24-25. **Laser Technology and Systems Applications.**
Feb. 26-28. **Infrared Technology and Applications.**

Artificial Intelligence: (Administrator: John Gilmore, EML, ext. 3471)
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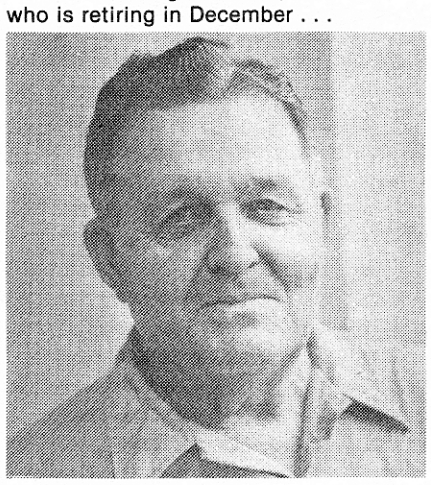
. . .is published for Wardell Stephens, mechanical technician II in the Facilities Management Department who is retiring in December . . .



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