Labs Awarded $4.8 Million for SDI Research

Everyone has heard that Georgia Tech has received the largest research contract in its history—$21.3 million awarded to the School of Electrical Engineering to develop ultra-high-speed computers for controlling missile interceptors. What is not so widely known is that two GTRI laboratories have tasks under this contract totaling $4.8 million to perform research on related aspects of these interceptors.

Both the Radar and Instrumentation Laboratory (RAIL) and the Energy and Materials Sciences Laboratory (EMSL) are contributing to the overall effort. The research is in support of the Strategic Defense Initiative (SDI) and is sponsored by the U.S. Army Ballistic Missile Defense Advanced Technology Center at Huntsville, Alabama.

Guidance Techniques
RAIL has a $2.4-million, five-year contract to study guidance mechanization concepts for ground-based Army interceptor missiles seeking to destroy hostile nuclear-armed missiles either while they are still in space (the exoatmosphere) or just after they have penetrated the earth’s atmosphere (the endoatmosphere).

RAIL has long had a working relationship with the Army’s Strategic Defense Command, of which the Ballistic Missile Defense Advanced Technology Center is part, and has gained a great deal of experience in seeker and sensor technology in various tactical programs. For the last year and a half, RAIL researchers have been working on a terminal imaging radar that would pick out reentry vehicles from clutter, decoys and other “trash” sent up by the enemy to confuse our interceptors.

Energy-Absorbing Materials
In EMSL, John Handley is directing a study of integral heat protection materials for use in interceptor missiles. The Thermophysics Branch will be testing and evaluating various heat shield concepts that will be used to protect the ground-launched interceptors from the severe aerothermal heating environment that they will encounter during their hypersonic flight through the atmosphere. Heat sink, ablative and actively cooled designs will be considered. The materials used in these designs must be characterized from the structural, chemical, thermal and aerodynamic viewpoints.

“Essentially, we’re evaluating the Army’s materials in high-stress environments,” Handley explained. “Since no test facility exists that will simulate the range of operating conditions for their next generation interceptors, we’ll have to perform a series of separate simulations. Design procedures will be based on these simulations and their associated analyses.

“We’ve worked with the Advanced Technology Center since 1977 through the radar directorate,” Handley added. “This program is an opportunity to utilize our testing capabilities. Our program will provide an engineering solution to a difficult problem. We’re dealing with interceptors that must go faster than previous interceptors for shorter periods of time.”

Conferences to Focus on Manufacturing Technology

Georgia Tech is holding two special conferences on manufacturing technology this month. Although the programs are almost identical, the audiences will be different. Industrial executives and managers are invited to the sessions on October 22-23, while the October 29-30 conference is for Department of Defense administrators.

“The conferences are designed to facilitate joint research efforts between Georgia Tech, on the one hand, and industry and government, on the other,” says Lanny Feorene, conference coordinator and director of GTRI’s manufacturing technology program.

Both meetings will emphasize research in the areas of intelligent systems, sensor technology, and computer-integrated systems. “We polled executives of more than 80 leading U.S. firms during the past year, and a majority singled out these topics as important,” Feorene said.

The presenters are almost equally divided between GTRI and the academic side of Georgia Tech. From GTRI, they include: EML—Ron Bohlander, John Gilmore, James Larson; ESL—Bill Williams, Hugh Denny, Linda Martinson, John Martin, Roy Scraggs; SEL—Fred Cox.

Academic participants are: EE—Ron Schafer, George Yachtsevance; CH—Joseph Schork; IOS—Richard DeMillo, Janet Kolodner; ME—Wayne Book; AE—James Craig, Daniel Schrage; ISE—Christine Mitchell, Alan Porter; GTICES—Leroy Emkin.

Tom Stelton will provide an overview of Georgia Tech research, and Don Grace will summarize GTRI military and industrial research. Lt. General Melvin F. Chubb, Jr., Commander, Electronic Systems Divisions, AFSC, will deliver the keynote address for the military conference. Others on the programs include Jerry Carey, President Joseph Pettit, and Governor Joe Frank Harris.

Mary Ann Burke of the Research Communications Office handled the conference arrangements.

EMSL Revamps

The Energy and Materials Sciences Lab (EMSL) has upgraded its chemical research program into a division. Dan O’Neill is chief of the new Chemical Systems Division, which embraces the biotechnology and chemical engineering activities in EMSL.

Reporting to Dr. O’Neill, William A. (Bo) Hendrix heads the Thermal Processes Branch. He will assume responsibility for entrained pyrolysis process development from Jim Knight, who will be retiring late in 1985 after 40 years of meritorious technical leadership at Georgia Tech. Leadership of a new Biological Processes Branch remains open.

Bob Cassanova continues to devote 25% time to directing the Thermal Sciences Division. Under him, John Handley heads the Thermophysics Branch and Tom Brown heads the Solar Energy Branch. David Asbell has been named director of the Advanced Components Test Facility (solar site).

The Materials Science Division remains with Tom Starr as chief and Garth Freeman as head of the Materials Characterization Branch. Dr. Starr also heads the Materials R&D Branch.

Wally Shakun now reports to the laboratory director with responsibility for industry programs and management of Area II facilities. Tudor Thomas continues to direct the zeolite research program.
Symposium Speakers Warn of “Passive Smoking” Dangers

By Lincoln Bates, EDL

Increasingly, there are few butts about it—involuntary intake of cigarette smoke may be more than simply an annoyance. Remarks at Georgia Tech’s Indoor Air Quality Symposium October 2 suggest that by risk assessment, if not hard evidence, “passive smoking” can be hazardous to your health.

Public health expert Dr. John Spengler of Harvard University noted that long-term studies have shown a higher concentration of benzene in smokers’ homes than in those of nonsmokers. He also said that cigarette smoke and occupational exposure to indoor air pollutants can accelerate the natural decline of pulmonary performance.

Tobacco smoke, noted EDL’s Dr. Charlene Bayer, is the primary source of particles in indoor air pollution. It contains nitrogen dioxide, chlorinated hydrocarbons, arsenic and other toxic elements. A pediatrician and epidemiologist from the Centers for Disease Control pointed to acute and chronic adverse health effects in infants resulting from passive smoking. Citing a 1983 Seattle study, Dr. Ruth Etzel said that middle ear disease, which has an annual price tag of $1 billion to $2 billion, is four times more likely in houses where parents smoke. The passive agent and mechanism remain unknown, but Dr. Etzel suggested that whatever irritates the lower respiratory tract may do the same in the upper.

Dr. Etzel included lung cancer and pulmonary function problems as other hazards related to infants and passive smoking.

“Passive smoking is becoming a big issue,” said Dr. Marilyn Black, director of EDL’s analytical lab and coordinator of the symposium. “We have a proposal out with Dr. Etzel for further research on cigarette smoke and its effects.”

Tobacco smoke is far from the only culprit in the relatively young field of indoor air quality. Speakers from the U.S. Environmental Protection Agency, Oak Ridge National Laboratory, National Institute of Occupational Safety and Health, and other agencies and institutions discussed radon, microbial sources, formaldehyde, faulty air conditioning, the “tight house syndrome,” and other aspects of indoor air contamination.

The symposium, said Dr. Black, drew about 100 people, including the speakers, from at least a dozen states. “We had top-notch speakers, and many of them from the government. If we held another symposium next year, “Dr. Black added.

EDL Winds Up Assistance in Central America

By Lincoln Bates, EDL

Engineers in the Economic Development Laboratory are accustomed to transferring their knowledge to plant supervisors, technicians and company managers statewide. But doing that in Spanish and in Central America is a different story, although as one recently returned staff member noted, not entirely different.

Alan Pashkevich spent the past year in Central America helping industries learn how to conserve energy in the face of expensive petroleum imports. Industries assisted ranged from breweries to textile plants to sugar cane mills.

The industries were similar to those Tech helps here at home—mostly small in size, with similar payback and similar tasks, and many using dated equipment and procedures,” observes Pashkevich. “But capital is tighter down there, the recession is deeper, and materials are harder to get.”

Pashkevich was a technical training advisor with the Regional Industrial Energy Efficiency Project. The project is based in Guatemala, but addresses industrial energy conservation throughout Central America.

Seminars and demonstrations were important means of technology transfer. Topics included energy management, steam systems, electrical systems, energy audits, and energy measurement and instrumentation techniques. Project staff also put together publications and distributed bulletins.

“The industrial boiler workshop was an attention-getter, as was electric energy management,” Pashkevich says. “We had about 50 participants per workshop by the fall. Included boiler operators who knew only how to turn a boiler on and off and those with 30 years of experience, rural workers and urban workers, engineers who were very theoretical and engineers concerned only with practical application, and managers of all sorts and levels.

“The energy audits were most useful, I think. They provided concrete steps to follow. We pointed out that efficient lighting may save six to 15 percent of energy costs or that one inch of insulation would reduce 90 percent of energy loss. The potential for savings was appreciated.”

The Tech team also trained Central American engineers to perform energy audits and review audit reports.

Georgia Tech, a subcontractor to the Central American Institute for Industrial Research and Technology, began its efforts in May 1983. According to Ken Maddox, director of Tech’s International Programs Branch, funding from the U.S. Agency for International Development 20 years of experience, rural workers and urban workers, engineers who were very theoretical and engineers concerned only with practical application, and managers of all sorts and levels.

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NEWS BRIEFS

GTRI to Host Women’s Lunch

The 1985 Georgia Tech Women’s Christmas Luncheon will be hosted by GTRI and is scheduled for Friday, December 13. The theme is “A Centennial Christmas.” Committee are making plans for the menu, entertainment, decorations, and door prizes. All women employees will receive an invitation in mid-December.

SEL Field Office Moves

SEL’s Eglin AFB field office has moved into larger quarters off the base and should be addressed as follows:

Georgia Tech Field Office
2112 Turner Boulevard
P.T., Walterboro, SC 29588
(904) 862-6229

STL Division Forms Branches

The Microwave Systems Division (MSD) of the Systems and Techniques Lab (STL) has formed three branches as follows: The Development Branch is headed by Dayton Adams, who will continue his assignments as associate chief of MSD. This branch primarily will provide antenna and microwave components to STL’s traditional sponsors in the simulation business.

Larry Corey heads the Antenna Analysis Branch, which will provide theoretical analysis of reflector antennas, phased arrays, and radar systems. The Antenna Measurements Branch will offer hardware and software support for antenna measurement systems under the direction of Howard Atkinson.

STL Continues Long-Term Association with FTD

The Systems and Techniques Lab (STL) is proceeding with final negotiations for a new contract with the Air Force’s Foreign Technology Division (FTD) at Wright-Patterson AFB. The new contract, which is for one year with two one-year options, will provide for continuation of a series of contracts under which STL has been rendering task-type analytical support to FTD continuously for 11 years. In recent years, STL also has had several other contracts with FTD for both hardware and analytical work. This fall STL is completing the first year of a three-year radar design study for STD.
Integrated Circuit Technology Advances Spur Research

By John Daher, ECSL

Rapid improvements are being made in the functional performance of high-speed, high-density integrated circuits. But little attention is being directed to electromagnetic compatibility (EMC) conditions that exist, and so what appropriate steps should be taken to eliminate these problems.

The Department of Defense has initiated the development of very high speed integrated circuits (VHSIC) for two major reasons. First, is the need to produce new high power, high efficiency, and low noise components. Second, there is a need for new high performance, low noise, and low noise components. These components can be used to design new high speed, high performance, and high efficiency systems.

Software Review

By Pat Mathiasmeier, RSTF

The Research Software Training Facility now offers three new courses: SuperProject, Presentations Graphics using Picturre, and VHSIC. These courses are designed to help students understand how to create effective presentations using PowerPoint, and how to use SuperProject to create effective presentations.

SuperProject provides instruction in a software package used for the planning and tracking of complex, multi-task projects. SuperProject combines techniques of project management with the latest software to provide an effective tool to use in managing projects.

The project director can use SuperProject to define activities, choose the order, length of time, completion date, personnel responsible, etc. Gantt or PERT charts can then be used for planning and tracking of a project.

Problems encountered in software include:

- Difficulty in creating effective presentations using PowerPoint
- Difficulty in planning and tracking of complex, multi-task projects
- Difficulty in using SuperProject to create effective presentations

IBM PC: Pictures is a menu-driven software program that creates chart layouts which are displayed using the VideoShow and a color monitor. The VideoShow provides high-resolution (2000 x 600) display of 1000 different colors and interfaces with a camera for display of high-quality 35 mm slides.

Other classes available at RSTF include:

- Basics of Computer Literacy
- Beginning and Advanced DOS

Software Training Schedule

LISP (4-3:30: Nov.- 4: Beginning Symposia (3-4:30): Nov. 7,
Symphoni Communications (1-3:30-4:00): Nov. 9, 10.
Integrating Symphoni Environments (3-4:30): Nov. 15,
Symphoni Word Processing (9-12): Nov. 19
PROFS Scheduling (10-12): Nov. 8
PROFS Document Mode (10-12): Nov. 22

Beginning and Advanced Lotus 1-2-3
Symphony
Beginning and Advanced dBASE II
"C" Programming Language
Personal Editor
Microsoft Word
Beginning and Advanced Wordstar
PROFS-Beginning, Advanced, Document Processing, Scheduling
Call RSTF at ext. 6206 to sign up for classes.

PROFESSIONAL ACTIVITIES

COMPUTER RELATED SERVICES

Congratulations to the following, who received master’s degrees from Georgia Tech on September 7, Lee (3-5:30) A. Tnenberg (ICS), John Dillard (ICS), and Bob Malcolm (Mgt).

ECONOMIC DEVELOPMENT LAB

Claudia Hufn and Deborah Lockman presented a paper entitled “What’s New in the Economic Development Laboratory” at the Annual Practical Conference on Communia in Knoxville (TN) October 11-12. The conference was sponsored by the Society for Technical Communication.

EHS Chief John Nemeth has been appointed to the Governor’s Hazardous Materials and Environmental Advisory Board. In early October, he spoke at the National Conference on Small Business and the Environment at Washkew, Wash, Symposium, 1984, was reprinted in the September/October 1985 issue of WaterNews.

The Engineering Technology Branch, in cooperation with the Georgia Pollution Federation and the Georgia Pollution Processors Association, presented the second in a series of workshops on repetitive motion injury for first-line supervisors at poultry processing plants. The September 24 workshop, held at Gainesville College, was coordinated by Craig Wynn and Nancy Davis. Instructors were ergonomist Dan O’Reilly and physical therapist specialist Bobby Cline.


Theory in Beijing, China, in late August.

At a meeting on the use of computers in nuclear power plants, held September 9-12 in Phoenix (WA) by the American Nuclear Society, Jim Mahaffey presented a paper on the use of computers in the emergency response data systems at Georgia Power’s Plant Hatch, including a 15-minute film of an actual automatic shutdown incident at the plant.

Congratulations to Michael Witten for his achievement in the M.S.E. in September.

Roy Miller recently attended a one-week conference, “Cost Schedule and Performance Measurement at the Defense Systems Management College at Fort Belvoir (VA).”

Lloyd Lilly has been approved for the graduate student in the Institute of Electrical and Electronic Engineers.
PERSONNEL NEWS

COMPUTER RELATED SERVICES
Ron Creswell has transferred from SEL and is acting manager of the Research Software Training Facility.

ECONOMIC DEVELOPMENT LAB
Deborah Lockman has been promoted to program coordinator in the Industrial Extension Division.

Carolyn Carter is the new administrative secretary in the Madison Regional Office.

Maureen O'Neil Fellow has joined the staff of the Savannah Regional Office as a research scientist. She received her B.S. in psychology from Hamilton College (NY) and her M.S. in human factors engineering from Ohio State University. She has two years experience with the American Society for Engineering Education and is particularly interested in the office environment and worker motivation.

ELECTRONICS & COMPUTER SYSTEMS LAB
Kirkiny S. Mooreland has joined the Computer Technology & Applications Division as a research scientist. She has a B.S. in computer science from the University of Kentucky and worked 4 1/2 years in the Software Development Group at Westinghouse Electric Company. Her work encompassed development of the Alabama Power Company safety parameter system and the research, design and documentation for the advanced control room engineering working model. She moved here from Pittsbugh with her husband, Doug. Gina Hillhouse has been made a research scientist I in the Command & Control Division after receiving her B.S. in information and computer science from Georgia Tech in September. As a student assistant, she was a valuable contributor to the Penetration Analysis Project for the U.S. Air Force.

Glenn Champion has joined the Electromagnetic Compatibility Division (EMCD) as a research engineer I. As a student assistant in EMCD for two years, he helped develop a unique electromagnetc probe that can be used to distinguish coin denomination. He also worked on laboratory measurements to characterize a microwave feed horn, design and development of analog circuitry, and development of several automated test programs.

EMCD also welcomes Betty Dunlay as administrative secretary. She comes to Tech from Georgia Public Broadcasting. The Command & Control Division welcomes student employee Larry Adams, who is pursuing a physics degree, and says farewell to Larry Becker.

Radar & Instrumentation Lab
The Analysis Division welcomes GRA Steve Sutton, and the New Jersey office welcomes secretary Maureen Hennessey. Lizbeth Applebaum has transferred to EML.

SYSTEMS & TECHNIQUES LAB
The Design Services Group welcomes Alan Freeland, electronics technician I.

SYSTEMS ENGINEERING LAB
David Pfeffer has been appointed acting chief of the Countermeasures Development Division, a position recently vacated by Tony Chimera. Dr. Fellers will continue as head of the Advanced Countermeasures Branch.

Judith Wiesman recently was promoted to artist II. The Defense Systems Division has gained Dorothy Baskin, senior secretary; Randy Hess, co-op; and Paul Hudson, student assistant.

Resignations at SEL include Marti Boyce, Chet Goins, Mark Lineberger, and Andy Spießbach.

Personal Notes

EDL: Our deepest sympathy goes to Elizabeth and Hardy Taylor, whose son, Hardy, Jr., died October 8 of injuries received when a horse threw him.

ECSL: Jackie Perkins and Donald L. Piper were married on September 21.

EML: A baby girl, Stefani Diane, was born September 26 to Alice and Ron Forsythe.

RAIL: Jill Kaplan recently got married and is now Jill Bach.

Marvin Cohen is moving to New Jersey to head the Fort Monmouth office for one year.

STL: Vince Camp was married on September 21 to the former Susan Phillips. JoBeth and Douglas Martin have a daughter, Autumn Len, born September 17.

Maggie Harrison's birthday was anything but the usual working day. She hadn't been at work long before a Georgia State Trooper arrived, served her with a warrant for her arrest (charging that she had lied about her age when she arrived in the Colonies 17 years ago), handcuffed her, and took her off to jail on the Maricopa square. Luckily, it turned out to be a joke played by some of her "friends" at RAIL. It was all for a good cause: to raise money for the American Cancer Society.

Network Operations Center Assists GTRI Users

The Network Operations Center (NOC) is a centralized network support facility created as an extension of Tech's Office of Telecommunications and Networking and its Office of Computing Services. NOC operators are available 24 hours a day, seven days a week to assist users who may be experiencing network problems or who need network information.

Call NOC at 894-2777 for access to:
- The to-date network and computer status information, including notification of planned outages and known system constraints.
- Training operators to provide instruction and guidance on using GTNet.
- Technicians and engineers to resolve trouble reports and provide support for network maintenance.

Continuing Education Calendar

Asbestos: (For further information, call Ann Harbert, EDL, ext. 3806)

Electronics:
Nov. 4-8. Principles of Modern Radar, Atlanta. Course Coordinator: Jerry Eaves (RAIL), 424-9909.

Hazardous Waste:

GTRI PROFS users need to call NOC if they cannot get a network prompt or if they get messages saying "PROFS not found" or "Cannot connect to PROFS." They should leave the following data with the operator: name, telephone number, building, the kind of machine is terminal they are using, and the machine to which they are trying to be connected. If the screen says, "Success," then freezes, the network is all right, but the IBM computer used for PROFS is not. Then the user should call John Dillard of GTRI's Computer Related Services Department at 894-1717. It could also be called when the user is in doubt as to the source of the problem.

the GTRI connector

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