Station News

Georgia Tech Engineering Experiment Station

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IED Study Helps Georgia Prosper

The mobile manufactured housing industry significantly affects Georgia's economy. With the industry purchasing almost $500 million worth of materials and supplies annually, it is important to know which of these materials are being purchased outside Georgia that could be produced economically within the state.

Sherman Dudley and John Mills of EDL's Industrial Extension Division recently investigated the needs of south Georgia manufacturers for component suppliers. They then determined if in-state suppliers of such materials as exterior and interior doors, windows, water heaters, and bathtubs were meeting those needs.

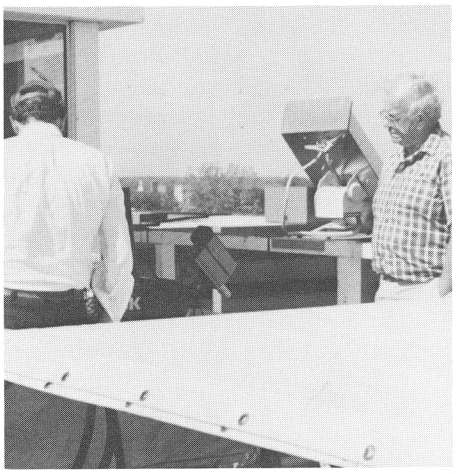
The study focused on 40 major categories among the hundreds of components required by manufactured homes. "Through on-site interviews, John and I were able to get specific product data and find out where the products came from," Dudley stated. "We then went on to identify components that local suppliers could provide more efficiently. Now we can begin to focus on attracting such suppliers to Georgia." Any improvements in the supply base will increase employment opportunities and spur growth among manufactured housing producers in south Georgia.

The study's findings indicate that south Georgia offers excellent market growth potential for suppliers. Last year, 35 south Georgia plants produced more than 35,000 units, and many of these facilities have additional capacity. Three new plants opened in the first quarter of 1984, and two currently inactive plants have production potential.

"The results of our study have already sparked interest in locating new suppliers and forming new companies," Dudley said. "In fact, we're working with six entrepreneurs and existing businesses that want to diversify to meet the growing demands of the manufactured housing industry."

This study is just one example of how Georgia Tech, through the skills and expertise of IED's staff, helps Georgia's industries grow and prosper.

Anne DeCurtis



STEVE BOMAR

Getting ready for radiometric observations of the eclipse, Bob McMillan (left) and Jim Gallagher check equipment atop the solar tower.

EES Scores with Eclipse Study

A unique combination of geography, facilities and expertise made Georgia Tech the center of world attention in May, and EES played a leading role in the event. Experts commented that measurements made by Electromagnetics Laboratory (EML) personnel during the May 30 annular eclipse of the sun may be the most precise ever made.

Their data will be used by the U.S. Naval Observatory to accurately determine the path of the eclipse. This will enable them to calculate more exactly the celestial orbit or position of the moon. By comparing the data to previous and future annular eclipses, they also hope to detect any oscillations or changes in size of the sun.

A team coordinated by Dan Campbell, a post-doctoral fellow at EML, set up five video cameras with time-coded signals at various positions across the campus and two on the perimeter. Thus they recorded the progress of the eclipse with extremely precise documentation as to time and place. "We were fortunate that there are geodetic survey markers at several locations on and adjacent to the campus to make surveying the exact locations of our cameras easier," Campbell said. He made all the sun filters for both their cameras and those of local TV stations.

The team set up an infrared camera atop the Baker Building and a millimeter wave radiometer (94 GHz) on the tower at the Solar Site, whose 550 mirrors were covered by black plastic bags. They also recorded pyrometric and temperature data. Jim Gallagher and Bob McMillan ran the radiometer, making the first long wavelength observations of a solar eclipse. Graduate Research Assistant Mark Gouker helped with the overall project.

The EES experiments were coordinated with similar activities performed by the schools of Geophysical Sciences and Physics.

Media coverage of the event was extensive. Local reporting was provided by four television and five radio stations and the *Journal-Constitution.* In addition, both the AP and UPI wire services, the ABC and CBS networks, and an editor from *Sky and Telescope* were on hand. Campbell was interviewed by reporters from the *Chicago Tribune* and the *Orlando Sentinel.* Many other newspapers published stories featuring Georgia Tech's efforts.

Yobs Looks Back on 28 Years at EES

Rudolph L. ("Rudy") Yobs, EES Associate Director for Resources Laboratories, is retiring June 30, capping 28 years of administrative service to the Station. Along the way, he has served under seven EES directors, held 10 jobs, and occupied 14 offices.

"That's quite a record for a textile engineer who took a 'temporary' job at EES in 1956 while studying for a master's in industrial management," Yobs reminisced. "My first assignment was as head of Supply Services. I later served as supervisor of all the service groups and as assistant to EES Director James E. Boyd."

Yobs moved to the Industrial Development Division (now the Economic Development Laboratory) in 1961, and was made head of its Research Services Branch in 1965. He became assistant director of EES in 1969. His industrial liaison work there led to designation of EES as the Georgia Productivity Center by the state legislature in 1975.

From 1975 to 1979, he directed the Technology and Development Laboratory, components of which are now dispersed among the three Resources Labs. When EES underwent a major reorganization in July 1979, Yobs was appointed EES Associate Director for the Resources Labs, a position he has held ever since. He currently is responsible for three labs with a total staff of 300.

Yobs was a leader in establishing the National Productivity Network and has just completed a term as its first chairman. He also has served on various other public and institutional bodies in the state and region.

Of his 28-year EES career, Yobs considers the last decade as the most exciting and enjoyable. "We entered an era of growth in 1973-74 with the coming of President Pettit. His interest in and support of EES catalyzed rapid growth with development of new activities and programs.

"On the resources side, I am proud that, among universities, we have developed one of the largest and most significant energy research programs in the country. We also have the largest industrial extension activity, one which has served as a model both nationally and internationally. We have long been a leader in international programs as well. Due to our efforts, Georgia was the first state to designate a productivity center. Our environmental health and safety service is of outstanding quality and has had phenomenal growth, while our Trade Adjustment Assistance Center is one of the finest of its kind. The fact that we've been able to build an array of outreach and technology transfer programs of this magnitude is very rewarding."

Yobs will be missed not only for his leadership in the resources research area and other contributions to EES growth, but for his warmth and gracious manner as well.

Solar Cell/Utility Interface Problems Tackled by TAL

Living in a house which draws some of its electrical energy directly from the sun by photovoltaic cells is an attractive idea. And advances in solar cell manufacture and rising costs of conventional energy sources are making the idea even more attractive. That's why the Department of Energy is funding the Technology Applications Lab (TAL) to investigate the technical problems now.

One of the problems TAL is studying involves the photovoltaic system/utility power grid interface. The average residence will need to supplement with power purchased from the electric utility company some of the time; at other times it will sell excess photovoltaic power back to the utility. This feedback can introduce harmonic distortions into the utility lines.

The distortions are created by power inverters, which convert the direct current produced by solar cells to the alternating current supplied by utilities to run our electrical appliances. These distortions can travel along the lines and join with others at places far from the input location. The aggregate effect can cause power losses and damage to utility equipment.

TAL engineers recently conducted field studies to gather hard data on the effects of harmonic current propagation at different locations on high-voltage power lines. In February, they collaborated with the Georgia Power Company, which provided access to Future One, a house with an on-line, 4-kW photovoltaic array located in Roswell. There, a digital random "noise" generator designed and built

GEORGE COKKINIDES

This is "Camp Kilovar," one of the test sites TAL used in February experiments to monitor harmonic distortions introduced into the utility grid by solar cells. TAL personnel had to camp on site 24 hours a day to guard the equipment, which was set up at roadside power lines. Excitement was added by numerous Georgia Power officials visiting by day, the police checking on the activities at night, and a snowfall.

by TAL injected the necessary currents of selected frequencies into the grid. The injected signal was detected by computer-controlled analyzers installed at a power substation which supplies the area and at a pole-mounted capacitor bank by the side of a road.

TAL repeated the same basic experiments in April at the Alabama Solar Energy Center (ASEC), located on the campus of the University of Alabama, Huntsville. ASEC currently runs a 2-kW photovoltaic system and has installed voltage and current sensors on the high-voltage lines to monitor its performance. This instrumentation and a short 12.4-kV line with a substation only a mile away made the site attractive for the harmonic propagation tests.

One of the purposes of both field tests was to verify computer modeling of the areas done by Dr. A. P. Meliopoulos of the Georgia Tech School of Electrical Engineering. Initial analysis of the data shows the modeling to be correct, but a more detailed analysis is still in progress.

The tests are part of the Southeastern Residential Experiment Station research project, now in its second year of funding by the U.S. Department of Energy. Project participants in addition to Georgia Tech include the Florida Solar Energy Center, the Alabama Solar Energy Center, and seven utility companies in four southeastern states. Larry Banta, TAL, heads the Georgia Tech portion of the study. Other TAL personnel assisting in the harmonics propagation field tests were George Cokkinides, Kenneth Huffines, Grant Curtis, Byron Paraskevopoulos, and Bryan Jackson.

MINICOMPUTER NEWS

New graphics will be available to users of the EES computers in July. The MiniComputer Service Facility (MCSF) will be installing DISSPLA, a library of FORTRAN graphics routines from Integrated Software Systems Corporation (ISSCO).

DISSPLA, Display Integrated Software System and Plotting Language, allows the new and nonexpert user to generate simple plots almost immediately. Using TELLAGRAF, also from ISSCO, a user can program interactively, using English-like commands and responding to prompts. DISSPLA provides the more experienced user with a full range of graphics primitives and enhancements.

These enhancements include selecting character alphabets and styles, placing headings or legends on the plot, and arranging several plots per page, as well as curve fitting and data smoothing. Lower-level routines allow control of page size, error messages, or parameter settings such as character height and rotation.

Advanced business features of DISSPLA include vertical and horizontal bar charts, shaded pie charts, and the calendar axes system.

DISSPLA also has the world coastline utilities which allow projection of either standard or user defined maps of world areas. Three-dimensional data presentation lets the user project three-dimensional axes, lines and data curves onto a two-dimensional page, as seen from any user specified position.

DISSPLA will be installed on both the ERB and CCRF VAX 11/780s, and will be available on the classified VAX as well. The ERB VAX has DISSPLA plotting for its HP plotter, the TRILOG printer, and a Tectronics graphics terminal. ERB's RAMTEK graphics terminal should be usable with DISSPLA soon after.

The Cobb County Research Facility has several HP plotters and a TRILOG printer using DISSPLA, and will soon have the capability for its RAMTEK, Raster Tech, and Vectrix graphics terminals.

Call 894-3175 at ERB or 424-0898 at Cobb County for assistance.

Art Vandenberg

KEITH NELMS

This participant in the Energy Management Instrumentation and Techniques Workshop recently conducted by TAL's Industrial Energy Extension Service isn't trying to shoot his instructor. He's just testing the use of an infrared pyrometer to measure temperature.

Professional Activities

ECONOMIC DEVELOPMENT LAB

In May, **David Clifton** gave a presentation on the Georgia Productivity Center and the National Productivity Network at the Federal Laboratory Consortium's 10th Anniversary Meeting in Alexandria, VA, and addressed the National Productivity Network Conference and Meeting in Raleigh, NC. At the latter conference, **Jim Muller** spoke on "The Micro Computer Network."

Bob Springfield reported on a survey of government apparel contractors at the American Apparel Manufacturers Clothing and Textile Innovation Technology Workshop on June 29 at Martha's Vineyard.

At the American Industrial Hygiene Conference held in Detroit, MI, May 20-25, **Marilyn Black** presented papers on "Monitoring of Indoor Formaldehyde Exposure" and "Occupational and Residential Exposures to Pesticides"; **William Spain** presented a paper entitled "Some Modern Trends in Occupational Health and Safety: An Industrial Hygiene Manager's View," gave a presentation on "Asbestos Abatement Assistance," and coauthored a presentation on "Industrial Hygiene Management: Professional Development of the Staff"; and **Bill Ewing** spoke on "Use of a Chloride-Containing Aerosol for Source Recognition During an Indoor Air Quality Investigation."

John Nemeth spoke to the Southeastern Fabricare Association on June 23 at the Georgia World Congress Center on "Hazardous Waste: What Will We Do with It?"

Marilyn Black was invited to present her research findings on indoor formaldehyde measurements to the Consumer Product Safety Commission in Bethesda, MD, in April; she also lectured on "Formaldehyde Monitoring for Pressed Wood Products" in March at the National American Chemical Society Meeting in St. Louis.

ENERGY & MATERIALS SCIENCES LAB

At the Southeast Electron Microscopy Society meeting in Birmingham, AL, on May 24, **Jim Hubbard** presented a paper on "The Effect of Acetic Acid Cleaning on Corroded Fracture Specimens."

Charles Gorton, James Knight, and **Raymond Kovac** presented a paper, "Oil from Biomass by Entrained Flow Pyrolysis," on May 15 at the 6th Symposium on Biotechnology for Fuels and Chemicals in Gatlinburg, TN. Gorton also gave a status report at DOE's 16th Biomass Thermochemical Conversion Contractors' Meeting, held in Portland, OR, on May 8-9.

RADAR & INSTRUMENTATION LAB

Frank Williamson presented a paper on "Netting of Security Sensors," coauthored by **Gene Greneker** and **Nick Currie,** at the Carnahan Conference on Security through Technology in Lexington, KY, in May.

SYSTEMS ENGINEERING LAB

Henry Owen presented a paper on "The Impact of VLSI on Digital Technology Insertion Programs," coauthored by **Michael Kopp,** on May 22 at the NAECON Conference in Dayton, OH.

TECHNOLOGY APPLICATIONS LAB

Congratulations to **Claudia Huff,** who received third-place awards for several publications in the 22nd Annual Blue Pencil Competition sponsored by the National Association of Government Communicators. *The Industrial Energy Conserver* received its award in the "Newsletter for External Audience" category. Two technical briefs, "Solid State Motor Controls" (coauthored by **Joe Hoppe)** and "Coal Technologies for Georgia Industry" (coauthored by **Lamar Griffin),** won in the "Publication for Technical Audience" category.

Tom McGowan is the author of a fact sheet, "Choosing a Home Heating System," which is being distributed by the Georgia Office of Energy Resources to help the homeowner make the best choice of a new or replacement heating system.

1984 Promotions

Congratulations to the following 47 EES employees, who are being promoted, effective July 1, to:

Principal Research Engineer:

Donald E. Clark	ECSL
Nicholas C. Currie	RAIL
Thomas M. Miller, Jr.	SEL

Senior Research Associate/ Engineer/Scientist:

R. Dale Atkins	TAL
Marvin N. Cohen	RAIL
Joyce Ann Copeland	SEL
Charles M. Estes, Jr.	EDL
Calvin Runkle Jameson	ECSL
Virginia V. Jory	STL
John J. Landgren	SEL
Robert B. Lann	EDL
George H. Lee	EDL
David P. Millard	ECSL
Kerry P. Pullen	STL
Michael J. Rowan	EML
Katharine L. Schlag	SEL
Joseph Seals	ECSL
Robert W. Springfield	EDL
John J. Timar	SEL
Victor K. Tripp	ECSL
Michael S. West	RAIL

Research Associate/Engineer/ Scientist/Technologist II:

Dinal S. Andreasen	STL
Ronald R. Bradford	RAIL
Beth Cockerham	SEL
Mark A. Corbin	RAIL
Rickey B. Cotton	STL
Avery R. Davis	EML
Robert J. Didocha	TAL
L. Patrick Elam, III	ECSL
Mark G. Frost	EML
Constance H. Green	SEL
Jeffrey C. Hopper	ECSL
James W. Larsen	EML
John C. Mantovani	ECSL
James R. Marks	SEL
Paul J. Middendorf	EDL
David R. Morehead	RAIL
Alexander N. Morrison	STL
Terrence L. Moy	TAL
William H. Nolte	STL
Henry L. Owen, III	SEL
Ronald E. Strickland	SEL
James V. Thomas	SEL
David F. Tsao	SEL
Marshall R. Weathersby	EML
Susan R. Wheeler	EML
Johanna S. Williams	EDL

FLASH!

The Cobb County Research Facility had its first Red Cross blood drive on June 19. Carl Baxter reports that 73 pints of blood were collected, and there were 4 deferrals.

Strictly Personal

ELECTRONICS & COMPUTER SYSTEMS LAB

Jim Fuller has resigned.

ENERGY & MATERIALS SCIENCES LAB

We were sorry to hear of the death of **Wayne Case** on May 26.

OFFICE OF THE DIRECTOR

Milton Bennett has transferred to EES from the Office of Business and Finance. He initially will assist Jerry Carey in quality assurance and interfacing with OCA contracting officers.

RADAR & INSTRUMENTATION LAB

Congratulations to **Pat** and **Jim Page** on the birth of a daughter May 31.

RESEARCH SECURITY DEPARTMENT

Welcome to **Alice Turner,** clerk IV, and **Sandi Keesler,** clerk II.

SYSTEMS & TECHNIQUES LAB

STL said good-bye in May to **Jeff Madill, Mark Krah,** and **D. H. Howe.**

The lab held its annual family picnic on May 19 by the GTRF-CC lake. About 100 employees and guests enjoyed the sun, food, and such activities as volleyball, softball and kayaking.

SYSTEMS ENGINEERING LAB

Dean Spencer became head of the Simulation Systems Branch of the Defense Systems Division on June 1.

Roy Miller has transferred to ECSL to become chief of its Command and Control Division.

Welcome back to **Sharon Reeves,** senior secretary, and to **Rick Morrison,** research engineer I. A first-time welcome to **Jeff Hallman,** research technologist I.

Anna Sanders has resigned.

Congratulations to **Tom Cotter** on his recent promotion to engineering drafter III, and to **Ed Masters** upon receiving his master's degree in electrical engineering.

The SEL Ravagers are the 1983-84 Yellow Jacket Bowling League champions. Congratulations to the team—**Gary Holladay** (captain), **Steve Kaney, John Savage, Carolyn Olive,** and **Mike Hatch.**

TECHNOLOGY APPLICATIONS LAB

Welcome to Graduate Research Assistant **Munir Naeem. Steve Robertson** has resigned.

Kenneth Huffines reported that he, along with **William Bagwell** and **John Stapleton** of STL, were on the rescue team to Valhalla Pit, the Alabama cave where the two Georgia Tech students were killed in a freak accident. They are members of the Dogwood City Grotto (Atlanta) Cave Rescue Team, a unit of the Walker County, GA, Civil Defense.

The O'Keefe intramural softball team advanced to the playoffs by taking first place in the Bruin-B League. Although eliminated in the first round, the team posted a 6-2 overall record.

EDL Moves Again

Part of the Economic Development Laboratory has moved off campus again, this time to the Life of Georgia Tower at 600 West Peachtree Street. The move to the building at the corner of West Peachtree and North Avenue was made on June 4.

The Trade Adjustment Assistance Center is located on the 12th floor. The Office of the Director and the other units of the Business Development Division—The Technology Utilization and Commercialization Center and the Rural Assistance Program—are housed on the 10th floor.

Left on campus are the Industrial Extension Division, which is moving into different offices on the second floor of the O'Keefe Building, and the Environmental Health and Safety Division, which is remaining in Area II.

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