

Station News

Georgia Tech Engineering Experiment Station

VOLUME 12 NUMBER 9

MAY 1982

National Park Service Uses Tech Expertise

The National Park Service has a far-flung empire of facilities stretching from Alaska and Hawaii, through the contiguous 48 states, to Puerto Rico and the Virgin Islands. With the myriads of visitors that stream through them, keeping buildings shipshape becomes a monumental job.

So the Service recently embarked on an innovative and ambitious computerized facilities management program to inventory and inspect all its buildings nationwide. The ultimate aim: more efficient and cost-effective maintenance.

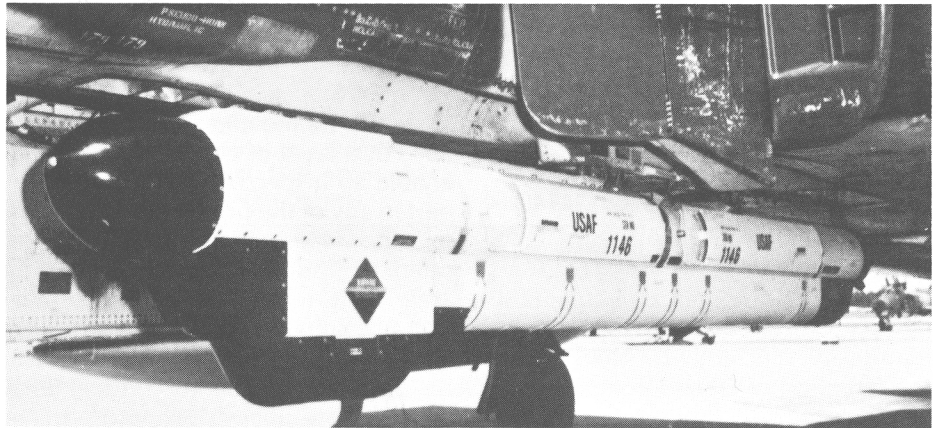
This comprehensive system encompasses eight priority areas: life safety, health, accessibility, energy use, mechanical equipment, structural condition, electrical aspects, and overall maintenance. After purchasing the software from a contractor, the Service turned to Georgia Tech for help in testing, evaluating and modifying the program to meet its specific needs.

The Park Service found just what it needed in Tech's Center for Architectural Conservation, directed by architect **John Myers**. And EES is providing extensive support, with **Grant Curtis** of the Technology Applications Lab (TAL) directing the EES portion of the program.

TAL is responsible for three major tasks: analyzing the needs of facilities users; evaluating the mechanical, electrical and maintenance aspects of the system; and developing a training package for inspectors.

"There are other computerized facilities management systems," says Curtis, "but this is the first time one has been attempted on this scale. The

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This ALQ-119 electronic countermeasures pod is mounted on a plane at Eglin Air Force Base. The effectiveness of this system is evaluated against EES-built simulators in the Eglin electromagnetic environment. (Photo supplied by U.S. Air Force)

EES Office Helps Improve Tactical Aircraft Survivability

A family of computer simulations developed by the Systems Engineering Lab (SEL) is supplying the U.S. Air Force with a long-needed link between operational test and evaluation of individual electronic countermeasures (ECM) systems and overall evaluation of the effectiveness of defense suppression concepts. Since September 1980, SEL has been providing engineering support for this endeavor to the Tactical Air Warfare Center (TAWC) through an on-site field office at Eglin Air Force Base, Florida.

For many years, the Tactical Air Warfare Center has been the focal point for the testing of ECM systems. Testing is conducted either by actual flying of ECM equipment on the Eglin test range or by laboratory evaluation. In 1979, a special task force was formed at TAWC to enhance the ability of tactical aircraft, such as the F-15, to survive by improving defense suppression.

The approach chosen was to use a large-scale simulation (or family of simulations) in which tactics, attitudes,

maneuvers and ECM techniques would be varied until the best combinations were found. After an exhaustive inventory of available programs, the Georgia Tech family of models was selected for the project. The General Effectiveness Model (GEM) is the cornerstone of this family. It links together various modules for use in detailed assessments of the effects of ECM, maneuvers, chaff and other expendables on the air defense threat.

In a unique experiment, one of the models is currently being "calibrated" by comparison with the results of a test of a current chaff dispenser on the F-15 fighter plane. The model will be used to extrapolate test results to complex conditions which cannot be produced in the "real" world (the Eglin test environment).

Participation with TAWC is complemented by other interlacing EES activities. STL and RAIL have built radar equipment used on the Eglin Range.

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American Society of Heating, Refrigerating and Air-Conditioning Engineers executive staff members visited Georgia Tech May 10 and spent the afternoon learning about EES. Shown is ASHRAE Executive Vice President Andrew T. Boggs. (Photo by Charles Haynes)

Computer Program For Bibliographies

Do you need to organize a large bibliography — one that is too large to manipulate efficiently by hand? Under the direction of **Gene Greneker**, RAIL co-op student **Glenn Futrell** has developed a computer program that may be just what you're looking for.

Their Research Publications Organizational Computer Program (RPOCP) allows the user to develop, archive and recall a data base of any reference material involving titles, authors, sources and publication dates. The user may input data randomly and retrieve a listing sorted on any of 21 parameters. He also may obtain a printout sorted on the basis of up to 50 keywords.

The program is written in the PASCAL language and stored on the Georgia Tech Cyber computer. It is "conversational," and can be used by anyone with basic typing skills. All that is needed is a time-share terminal, a user account with the Computer Center, and an RPOCP Users Manual.

RPOCP was developed at the request of **Jim Wiltse**, EES associate director for the electronics labs. His prime purpose was to develop and maintain a large, multi-laboratory data base relative to millimeter wave publications, but he also had a broader purpose: to assist EES personnel who face the problem of organizing a large body of data pertaining to research publications or literature searches. If you'd like to give RPOCP a try, contact Dr. Wiltse, ext. 3494, or Gene Greneker, 424-9626.

Park Service, Cont.

task of implementing it is staggering. The Park Service owns an estimated 16,000 buildings on properties as diverse as the White House, the Arch in St. Louis, Cumberland Island, and Ocmulgee National Monument. Many of these structures are 30 to 40 years old or older. The Park Service is vitally concerned with assessing their condition and repair needs."

"We are attempting to develop a series of pertinent computer-based questions that will guide the inspector through the inspection process. The trick is to define and phrase the questions at a level of complexity that will enable an inspector who is not an expert in any of the priority areas to compile the necessary information. Computerized building reports will identify areas that require follow-up professional evaluation and corrective action. Eventually, the mass of data will be used as a guide for setting up a maintenance policy. It should provide answers to such questions as how often certain types of structures need painting and how long various kinds of roofs should last. Basically, the computer will be used as a management tool."

Tech researchers currently are in the throes of a three-month pilot project to field-test the inventory and inspection system at Mammoth Cave and Everglades National Parks, which have a total of 75 structures. The next stage will involve about 1,000 buildings owned by the Park Service but operated by concessionaires. They are mostly older buildings, predominantly motels, cabins, marinas, restaurants, and the like. Beyond that, who knows?

"This is basically a research project," says John Myers, "and we're operating in relatively uncharted waters. We're constantly having to modify the program as we progress. On something as experimental as this, the main question is: Will it work? If we can make it work, it will open up large vistas for applying computerized facilities management to many areas. And the expertise of a broad range of people in the entire Georgia Tech community will be useful in designing these programs."



Governor Busbee welcomes representatives of 60 major national companies to the Material Handling Research Center workshop.

Material Handling Research Center Holds Successful Industry Workshop

Eighty-five top representatives of some 60 national companies attended a workshop at the Hyatt Regency Atlanta on May 13 to launch Georgia Tech's Material Handling Research Center.

After a briefing from ISyE Professor **John A. White**, director of the Center, on how the Center is organized, what its facilities and capabilities are, and what benefits member companies can expect to gain, 10 firms made tentative verbal commitments to join at a cost of \$30,000 a year.

"We were elated at the tremendous show of interest by some of the nation's leading companies," said **Dale Atkins** of EES' Technology Applications Lab and associate director of the Center. "We had to switch to a larger room because the response was so much greater than we anticipated. And it looks like we already may be in sight of our first-year goal of 12 members."

Governor **George Busbee** welcomed the group on behalf of the state, and **Dr. Thomas E. Stelson** brought greetings from Georgia Tech. **Alex Schwarzkopf** of the National Science Foundation explained NSF's support in establishing the Center, the nation's first in this field. The participants were given an opportunity for feedback to ensure that the Center's research plans will be responsive to the needs of U.S. industry.



Left: Tech officials Tom Stelson (left) and John White (center) discuss the Material Handling Research Center with Alex Schwarzkopf of the National Science Foundation (right). Right: Dale Atkins of EES' Technology Applications Lab made the workshop arrangements. (Photos by Charles Haynes)

Eglin, Continued

Georgia Tech's Airborne Electronic Laboratories operated by SEL utilize the Eglin Range. Major General **Gerald Carey** (USAF, Retired), former commander of TAWC, is now an associate director of EES. **Andy Borden**, who has been manager of the Eglin office, was a member of this special task force.

In addition to supporting ECM effectiveness studies, the Eglin office is designing and implementing an automated Reliability and Maintainability data base for the determination of operational suitability. **Joe Harrison** is the current manager of the Eglin office. **Steve Stilley** (research scientist I) and **Craig Olson** (Auburn co-op) also are assigned to the office.

Staff Members Attend Meetings, Present Papers

ECONOMIC DEVELOPMENT LAB

William Spain presented a six-hour course entitled "OSHA Injury and Illness Records" at the American Occupational Health Conference in Toronto, Canada, on April 26-27. He also visited the Canadian Ministry of Labor to discuss Canada's occupational safety and health efforts.

Judi Komaki was at the University of Maryland May 28-30, where she led a university colloquium on "Exchanging Uncertain Outcomes for Certain Feedback" and spoke at the invitation of the North American Society for the Psychology of Sport and Physical Activity on "Singlecase Designs: Evaluation without Traditional Control Groups."

Darlene Fischer of the Gainesville field office received a certificate from the State Merit System for successful completion of the Secretarial Workshop held at Georgia Tech March 31-April 2.

ELECTROMAGNETICS LAB

Presenting papers at the Society of Photo-optical Instrumentation Engineers (SPIE) Technical Symposium East '82, May 6-7 in Washington, D.C., were: **Robert McMillan** and **Ronald Bohlander**, "Millimeter Wave Turbulence Measurements"; **Ronald Forsythe** and **James McSheehy**, "Automatic Millimeter Wave Mixer Measurements"; **Joe Newton**, **Joe Gaglio** and **Thomas Morton**, "Millimeter Wave Radiometry"; **Geoffrey Holah**, "The Use of Metallic Mesh in Sub-

millimeter Optical Components." **James Gallagher** chaired one of the sessions.

ENERGY & MATERIALS SCIENCES LAB

J. D. Walton attended the 84th Annual Meeting of the American Ceramic Society in Cincinnati May 4-7.

Abol Azhar attended the Oak Ridge National Laboratory's 4th Symposium on "Biotechnology in Energy Production and Conservation" in Gatlinburg May 10-14.

On April 6-7, **Hans Spauschus**, **Bob Cassanova**, **J. D. Walton**, **Tom Brown** and **Steve Bomar** attended the Solar Thermal Test Facilities Users' Association Annual Meeting at the University of Houston. Bomar and Brown presented a paper, and Walton chaired a session.

Bob Cassanova attended the DOE Solar Thermal Technology Semi-Annual Review Meeting in Washington, May 6-7.

John Brown, **James Hubbard** and **James Johnson** attended an American Society of Metals short course on Failure Analysis given at the University of Louisville on April 29.

EMSL displayed its capabilities for research into industrial and municipal solid waste disposal alternatives at the Institute of Environmental Sciences 28th Annual Technical Meeting at the Atlanta Marriott Hotel April 21-23. Representing the lab were **Wally Shakun**, **Mahendra Bery**, **Alton Colcord** and **Ginny Cross**.

OFFICE OF THE DIRECTOR

Jim Wiltse presented the keynote address on "Millimeter Wave Trends" at the SPIE Technical Symposium in Washington on May 6-7. He will be at the University of California, Berkeley, June 2-4 as an invited guest speaker. June 7-11, Wiltse will be in Norway as a consultant to the Norwegian Defence Research Establishment on millimeter-wave circuit techniques, traveling under the auspices of the NATO Advisory Group for Aerospace Research and Development.

RADAR & INSTRUMENTATION LAB

Robert Trebits conducted the fourth in RAIL's internal seminar series on May 5, speaking on "Proposal Win Strategy — How to Write Winning Proposals." Nearly 60 people attended. The RAIL seminars are coordinated by Neal Alexander and are open to non-RAIL attendees.

SERVICE GROUPS

Research Security Coordinator **Al Becker** attended a seminar at Vint Hill Farms, Virginia, May 3-7. He was invited by the Department of Defense to assist in rewriting their procedures for safeguarding classified material.

TECHNOLOGY APPLICATIONS LAB

Jerry Birchfield and **Ken Maddox** were out of the country April 25-May 12. They coordinated activities with the East-West Center in Hawaii and engaged in technical discussions with prospective sponsors in the Philippines, principally the Agency for International Development.

EES Welcomes 10 Employees

ELECTRONICS & COMPUTER SYSTEMS LAB

The Command & Control Branch welcomes Research Engineer I **Larry D. Becker**.

Hank Jenkins had back surgery again — this time to remove an implant which had been embedded to stimulate the healing process.

ENERGY & MATERIALS SCIENCES LAB

Ginny DiSalvo is the new senior secretary at the Solar Site. **Mai-Lan**

Aikens has transferred to the Comptroller's Office.

Charlotte Sanders is recovering well after having surgery May 4.

Our sympathy goes to **Tom Elfe**, whose father died May 13.

A lasergram by **John Owen** is one of only 11 art works recently purchased by the State of Georgia from 550 submitted in annual competition. After touring the state in the Georgia Art Bus, it will be hung in rotation in various public buildings. He will have a show at the Chattahoochee Valley Art Association Museum in LaGrange in June. He also has won money awards at the last four street shows where he has exhibited.

OFFICE OF THE DIRECTOR

Welcome to **Kathy Barbay**, new administrative secretary in the Hinman reception area. She replaces **Debra Woods**, who has moved down the hall to the Advanced Technology Development Center.

RESEARCH COMMUNICATIONS OFFICE

Mary Ann Burke was married on May 7 to Bill Moore.

SERVICE GROUPS

Candice Stilwell was married on May 1 to Earl Martin.

SYSTEMS & TECHNIQUES LAB

The "S" Program Office welcomes **Anne Roe**, lab technician, and **Leslie Herman**, administrative secretary.

Beth and **Len Cayce** are the proud parents of Laura Catherine, born April 8. **Rickey Cotton** was married to Annette Cawthon on April 28.

SYSTEMS ENGINEERING LAB

Joe J. Harrison (USAF, Retired) has joined SEL as a senior research associate and is the new manager of the Eglin field office.

Other new employees are **Jose A. Rugama**, research engineer II in the Defense Systems Division, and **John T. Parish**, research engineer I with the ESM Division.

SEL said good-bye to three employees: **Robert White**, **Eric Berkobin** and **Deborah Larkin**.

TECHNOLOGY APPLICATIONS LAB

Welcome aboard to **Ann Harbert**, secretary, and **Yvonne Kissi**, word processing operator.

Tech Delegation Visits China, Japan

EES Director **Donald J. Grace** was part of the 16-member delegation of Georgia Tech personnel accompanying President **Joseph M. Pettit** on a trip to China and Japan in April. The trip was financed by the Georgia Tech Foundation.

The high-level group was invited to China by the China Association for Science and Technology (CAST), the prestigious umbrella organization for 150 professional societies in the People's Republic of China. They discussed setting up a CAST/GIT exchange program for experts to lecture or engage in joint research. The Tech delegation also visited 10 key universities in science and technology to try to establish reciprocal exchange programs for both professors and graduate students.

In Japan, they presented Georgia Tech's research capabilities to large gatherings of members of the corporate community and visited Japanese corporations that were prospects for membership in Tech's Corporate Liaison Program. President Pettit and Vice Presidents **Warren Heeman** and **Thomas E. Stelson** also discussed opportunities for research and exchange programs with the universities of Tokyo and Osaka.

1982 Promotions

Congratulations to the following 34 EES employees, who are being promoted, effective July 1, to:

Principal Research Engineer/Scientist:

C. Thomas Brown EMSL
David C. Flowers SEL
Larry D. Holland SEL

Senior Research Engineer/Scientist/Associate:

O. David Asbell STL
Edwin A. Bethea EDL
Ronald A. Bohlander EML
James L. Clark TAL
Barry J. Cown ECSL
Sherman L. Dudley EDL
Fred L. Eisele EML
Harold F. Engler, Jr. SEL
Norberto F. Ezquerra RAIL
Joseph A. Gagliano EML
Joanne Green SEL
James A. Mahaffey ECSL
Ricky L. Moore ECSL
Ronald L. Seaman ECSL
Robert L. Somers STL
Jimmy A. Woody ECSL

Research Engineer/Scientist/Technologist/Associate II:

David R. Blount ECSL
Ralph Brooks RAIL
Dorothy M. Brown STL
Homer F. Cochran STL
Jackie M. Erney RCO
Scott A. Faulkner RAIL
Wiley D. Holcombe, Jr. TAL
Joseph G. Jay EML
Charles M. Luke RAIL
A. Robert Muzio STL
Benjamin Perry, IV RAIL
R. Bruce Rakes RAIL
Barry R. Sharp STL
Timothy M. Strike SEL
Bobby J. Wilson ECSL

Station News

Vol. 12 No. 9

May 1982

Published monthly for employees of the Engineering Experiment Station, Georgia Institute of Technology, Atlanta, Georgia.

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