the GTRI connector

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Volume 6 Number 4 February 1990

RAIL Gets NASA Contract for Acoustics Research

by Martha Ann Stegar, RCO

NASA-Langley has awarded the Radar and Instrumentation Laboratory (RAIL) a contract for basic research in acoustics and noise control that will bring in up to $4 million in task orders over a five-year period. The research will be performed under the direction of Dr. Krish Ahuja, a senior faculty research leader in the Technology Development Division.

"Our research is expected to be in four key areas," Dr. Ahuja says, "although we will work on any aspect of acoustics and noise control that NASA wants."

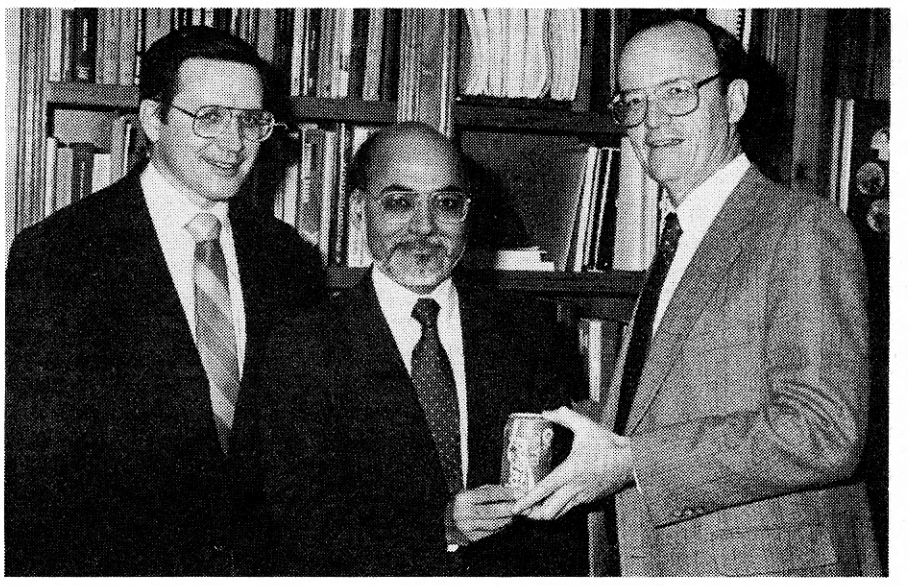
The first research area they have suggested to NASA deals with the noise from the exhausts of high-speed civil transport planes. The United States is trying to build a supersonic transport to compete with the Concorde, and noise suppressors are needed.

In the second area, GTRI researchers would look at the Aircraft Noise Prediction Program (ANOPP) developed by NASA-Langley. This program allows one to predict the noise from all parts of any aircraft. "We would evaluate that program, uncover any weaknesses, make recommendations, and possibly find solutions," Dr. Ahuja says.

The third area would involve looking at the effect of sonic boom on buildings and humans. The researchers would investigate the structural effects of sonic boom-caused vibration on buildings and how to predict the circumstances causing building contents such as items in kitchen cabinets to shake or 'rattle.' They would also observe the subjective effects on people. "The problem is not that the noise itself is harmful to people, but the annoyance caused by the startling jolt of the low-frequency sonic boom," Dr. Ahuja explains. He plans to use an older residential structure located at the Cobb County Research Facility for the study. The GTRI Director's Office has agreed to fund the purchase of a powerful acoustic driver to simulate sonic boom in direct support of this research.

The fourth major area would be a study of the general theory of how the environment affects sound as it propagates through the atmosphere. "This would help with acoustic detection," Dr. Ahuja says. "For example, you might identify what kind of helicopter was lurking behind a hill from the sound it makes. You want to be able to measure the sound and correct for effects of wind, humidity, and so forth."

A related study would investigate how much of a sonic boom would propagate to the observer under all types of environmental conditions, including land masses associated with different countries and different types of terrain. "We want to develop a theory, then conduct experiments and calibrate for measurements. We'll use a balloon to measure sound as a function of altitude and determine the effects of wind velocity, turbulence and humidity," Dr. Ahuja elaborates.



RAIL Director Ed Reedy (right) pays up on his promise to Krish Ahuja that if he were awarded the $4-million NASA-Langley contract, he'd buy him a Coke, while Division Chief Charlie Brown (left) looks on. Rumor has it that Krish also received another form of libation. *(Photo by Anita Edwards)*

Dr. Ahuja expects to receive his first task order under the new contract this month. The Arnold Engineering Development Center (AEDC) located at Tullahoma Air Force Base (TN) has asked him to investigate what happens to jet engines and facilities where they are tested when exhaust gases resonate large collectors. According to Dr. Ahuja, these collectors can be as large as 20 feet in diameter, and they act like organ pipes—they 'whistle.' This affects the jet plume coming out of the engine as well as the test facilities, causing them to shake. "We'll investigate the cause of this problem and identify methods to correct it," Dr. Ahuja says.

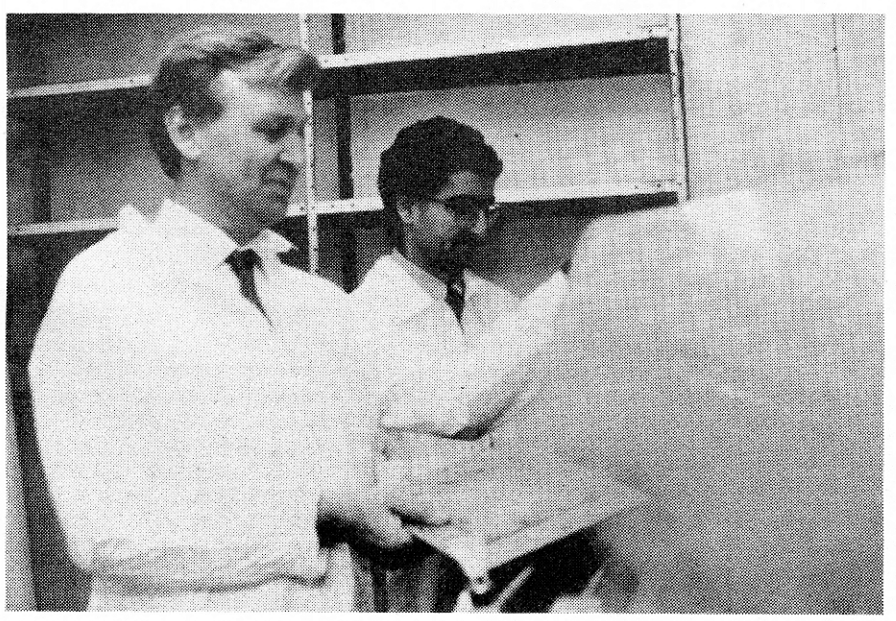
To perform the tasks ordered under the NASA contract, Dr. Ahuja will use not only GTRI personnel, but experts in the academic schools as well, particularly Aerospace,

See NASA, page 3

Conductive Caulk Undergoing Air Force Tests

by Ginger Pinholster, RCO

Two conductive aircraft sealants developed by researchers in the Energy and Materials Sciences Lab (EMSL) and the Electronics and Computer Systems Lab (ECSL) are undergoing field tests by the U.S. Air Force. The sealants are designed to fight corrosion, electromagnetic interference, and fire hazard.



Jan Gooch (left) and John Daher monitor the salt fog chamber where metal test joints coated with conductive aircraft sealants are tested for corrosion resistance. *(Photo by Joe Schwartz)*

Whenever two aircraft parts are joined together, water can be trapped within the seal, causing corrosion that weakens the structure. An improper seal also may permit stray electromagnetic signals to enter the plane, interfering with communications and compromising security. Metal joints can pose a fire hazard as well by interrupting electrical conductivity across the plane's surface.

In an effort to remedy these problems, the researchers established guidelines for producing conductive sealants that are galvanically adjusted to fight corrosion on aluminum substrates. They also identified two materials that demonstrated superior protection during laboratory tests. These materials—silver-coated aluminum and aluminum/nickel fillers in a two-part, "powder in plastic" urethane matrix—are now being tested on Air Force aircraft and will be evaluated on Navy aircraft as well.

Jan Gooch (EMSL) and John Daher (ECSL) are project co-directors, with Gooch being responsible for materials development and Daher for the electromagnetic testing.

"A typical aircraft must be conductive because of the danger of lightning striking," Gooch explains. "The aircraft must conduct along its entire surface in order to dissipate the charge. Otherwise, heat would build up and cause a fire."

According to Daher, any gap in the metal structure can allow electricity to penetrate aircraft joints, which jeopardizes electronic systems inside the plane. If arcing occurs, this can pose a fire hazard. Maintaining electrical continuity across metal joints also helps protect internal avionics systems from the damaging effects of electromagnetic waves produced by nuclear explosions. Similarly,

See Caulk, page 4

Radars in the Tropics

Honeymoons on a romantic tropical island in the Pacific are not all that unusual, but how many couples do you know who live and work on one?

RAIL researchers Bruce and Julie Huitt have been living at GTRI's most far-flung outpost—Kwajalein in the Marshall Islands—since August 1987. They work at the Kiernan Reentry Measurements Site (KREMS), providing engineering and scientific support to MIT Lincoln Laboratory on the development of real-time imaging and discrimination test bed systems for two radars located at KREMS.

Kwajalein is a coral atoll located 2,100 miles southwest of Hawaii and 500 miles north of the equator. Part of a chain of some 100 islands ranging in size from one quarter acre to 900 acres, Kwajalein was a site of fierce military battles between Japan and the U.S. during World War II. It has a tropical climate with temperatures year-round varying only slightly—from daily highs of about 88 degrees F to nightly lows around 78 degrees. The average annual rainfall is 100 inches. The huge coral formations and the extreme clarity of the water make scuba diving and snorkeling at Kwajalein some of the best in the world.

There are numerous sensors throughout the Kwajalein atoll, but the most interesting and advanced sensors are located on the island Roi-Namur, where the Huitts work. Roi is about 50 miles north of Kwajalein, so the Huitts commute daily by air.

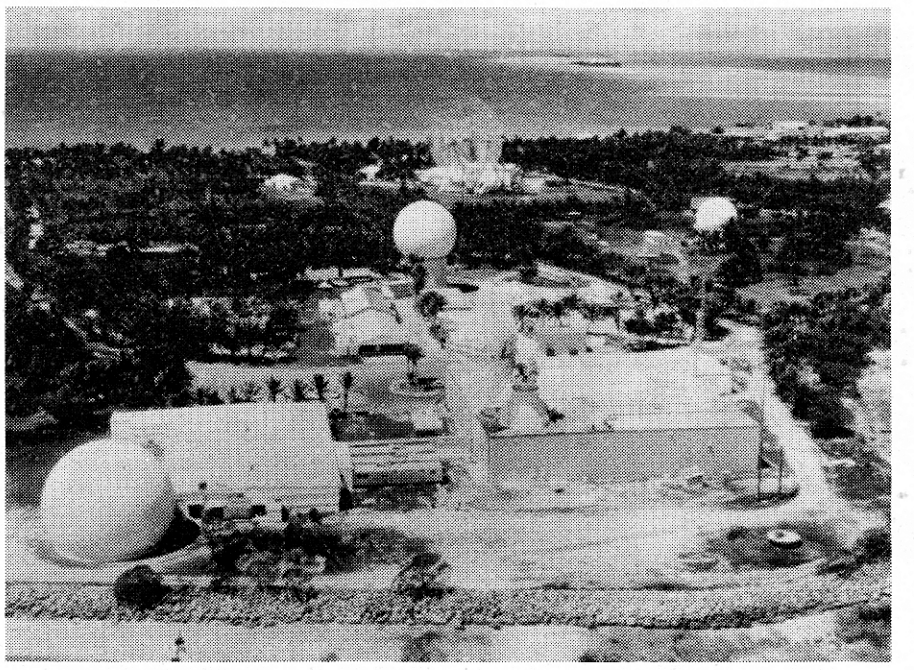
Roi is home to the following radars:

- A VHF/UHF radar with a 46-meter antenna transmitting with a peak power of 20 megawatts. It is used primarily for long-range reentry vehicle (RV) and satellite tracking.
- An L-band/S-band illumination radar with a 26-meter antenna and peak transmit power of two megawatts. The radar also serves as an illuminator for a multistatic receiver system with L-band sensors on separate islands. This radar is used to provide accurate coherent metric data along with RV and wake signatures.
- A C-band radar with a 12-meter antenna transmitting four megawatts of peak power. This radar provides high-accuracy tracking and beacon capability, a high-resolution signature, and wideband satellite imaging.
- A millimeter-wave radar operating in the Ka and W bands. The antenna is 13.7 meters in diameter and transmits 30 kilowatts peak power. This radar provides the finest metrics on site along with the bandwidths required for high-resolution radar imaging of reentry vehicles and satellites.

Bruce and Julie's work at Kwajalein has been predominantly in developing hardware and software for real-time imaging systems for the MMW and C-band radar. Bruce designed a major part of the digital pulse compression system which performs the necessary compression in range for the imaging system. He also was responsible for integrating many of the components of the imaging system with the MMW radar.

Bruce later served as test director and assistant test director on a number of reentry vehicle missions. A test director coordinates all of the activities of mission personnel and establishes agendas for the mission. Currently, Bruce is developing hardware that will interface with the C-band radar and allow real-time RV or satellite imaging.

Julie's efforts have been primarily in the software arena.

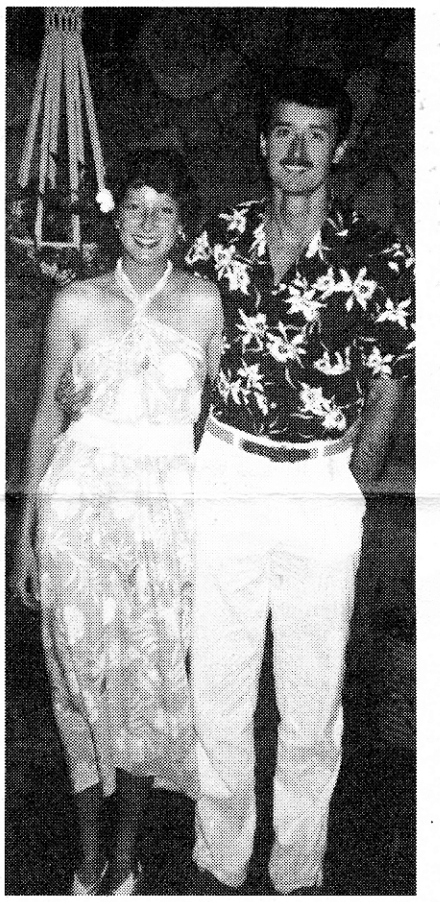


Aerial view of Kiernan Reentry Measurements Site at Kwajalein Island in the Pacific. (*Official USAKA photo)*

She has developed extensive automated diagnostics for the majority of elements in the imaging system. She also has been responsible for numerous modifications of the imaging software as well as for developing software support functions for it. Her role recently has been expanded, and she is currently the test director for the majority of upcoming missions.

The radars and the data processing and analysis systems at KREMS are supported by several contractors, including MIT Lincoln Laboratory, General Electric, and GTE Company. The Huitts are representatives to these contractors as well as their sponsors: the U.S. Army Kwajalein Atoll, the Ballistic Missile Defense group, and the Strategic Defense Command.

Bruce and Julie find Kwajalein a fascinating mixture of high tech and the rural tropics. They say that although its isolation has many disadvantages, its many attractive features bring people back for second and third tours of duty.



RAIL researchers Julie and Bruce Huitt live and work at Kwajalein.

Faculty Wooed for Industrial Extension Assistance

by Martha Ann Stegar, RCO

GTRI is launching a program to encourage greater faculty participation in technical assistance to Georgia industry. The program has two aspects: identifying faculty members with the expertise needed to solve specific problems and providing incentives for faculty members to work with the companies.

Professional staff members of GTRI's Economic Development Division (EDD) will assume a liaison role with specific academic schools. They will attend faculty retreats and planning meetings, receive copies of research reports, and become familiar with the expertise and research interests of individual faculty members. Thus, they will know who to turn to when a Georgia company approaches EDD for assistance with a problem.

"We're funded by the state legislature to provide short-term assistance to Georgia industry—up to a maximum of five days," explains Economic Development Chief David Swanson. "If a company needs more in-depth help, it may contract for Georgia Tech assistance at its own expense."

Engineers in the 12 field offices over the state generally are the first point of contact and provide most of the assistance, Swanson says. But academic faculty occasionally are asked for advice in areas of unique expertise. Until now, however, they have had little incentive to get deeply involved, as there was no way to reimburse them for their time. "State law forbids the use of state funds to pay an employee more than 100% of his or her salary," Swanson explains.

Under a new incentive program funded by the GTRI Director's Office, the time a professor spends on an industrial assistance project will be credited to a special account. He or she then may withdraw money from that account for educational and research purposes, such as travel to a meeting or conference, purchase of equipment or books, and hiring of GRAs.

"Our goal is to have faculty members handle 10% to 15% of our industrial assistance projects," Swanson says. "Not only will their participation aid the economic growth of the state and enhance education and research at Georgia Tech, but some of the projects may well develop into private consulting contracts for the participants themselves."

The initial guidelines for the program have been set up, and they closely follow the Corporate Liaison Program. EDD staff have already been assigned to interact with the College of Engineering, and the liaison program began in January. They plan to expand it to the new Ivan Allen College and the College of Architecture as soon as possible. For details, contact David Swanson, GTRI, Economic Development Laboratory, 894-6100.

Norwegian Chemist at EMSL

by Martha Ann Stegar, RCO

"In the near future, Norway will deplete its oil resources," says Norwegian chemist Kristin Sørby. "But we have huge reservoirs of natural gas in the North Sea. The objective of my research is to find an economical way to convert natural gas into gasoline."

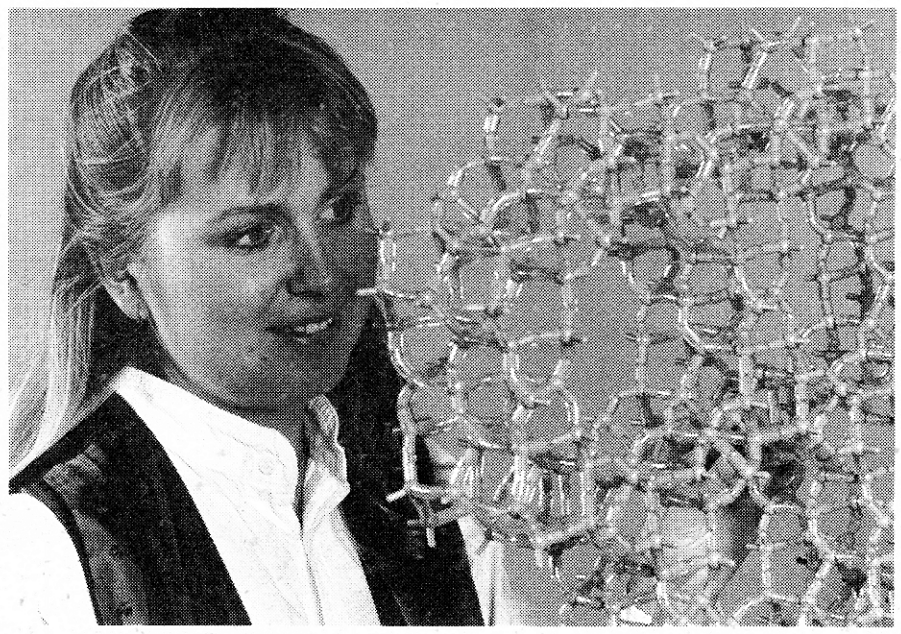
Her efforts have led her to GTRI to work with zeolite experts Tudor Thomas and Rosemarie Szostak in the Energy and Materials Sciences Laboratory (EMSL). She is synthesizing and characterizing molecular sieves for use as catalysts in producing gasoline and diesel fuel from natural gas.

"There are basically two paths to follow when converting natural gas (methane) into fluid gasoline," Sørby explains. "The Methanol to Gasoline process yields high-quality gasoline with a high octane number, but it's costly. The Fischer Tropsch (FT) method produces high-quality diesel, but the gasoline quality is poor because of the large number of linear hydrocarbon chains, which lowers the octane."

Sørby is concentrating on catalysts to improve the Fischer Tropsch synthesis process. She is experimenting with molecular sieves because their pore sizes can be tailored to permit selective yield of only the products desired. Her work is sponsored by the Center for Industrial Research in Oslo, Norway, an organization which is a member of GTRI's Zeolite Multi-Client Program.

The objective of Sørby's study, which will result in a doctoral thesis, is to synthesize and modify aluminophosphate-based molecular sieves for use in synthesis gas conversion. They are a new class of microporous inorganic solids that promise to be as useful and as scientifically challenging as the aluminosilicate zeolites, she says.

Sørby has selected three different molecular sieves based on their pore size, in order to observe the effect of pore size on the end product. She is characterizing these sieves by x-ray, scanning electron microscopy, infrared, nuclear magnetic resonance, and other methods. Finely dispersed cobalt, the active metal catalyst in the reaction, will be introduced into the pores of all three sieves. Finally, the prepared catalysts will be tested for their catalytical activity in the FT synthesis process.

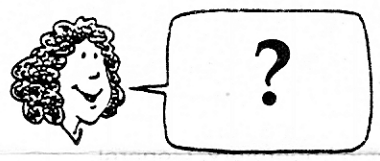


Kristin Sørby with a model of the large-pore molecular sieve she is using in her research on catalysts for producing gasoline from natural gas. *(Photo by Joe Schwartz)*

Sørby, who has a B.S. in chemistry and an M.S. in catalysis and petrochemicals from the University of Oslo, is under a three-year contract with the Center for Industrial Research to work on her Ph.D. At the end of this period, both she and the Center are free to continue their association or to part company. In the meantime, she shares her experience and findings with other researchers at the Center.

Sørby's home is in Oslo. Her father is headmaster of an engineering school, her mother is a political volunteer, and her brother also is a chemist. She came to Georgia Tech in September, and will be here until July. She lives in Home Park, adjacent to the Tech campus.

QUESTIONS, ANYONE?



by Charles McCullough, HRD

Ever since my GRAs were changed to academic-paid, I haven't understood their pay or their timesheets. For example, fiscal-paid employees get their pay at the end of the month in which they worked; biweekly-paids get their pay a week and a day after the pay period for which they are being paid. I can't figure out the relationship to an academic-paid GRA's pay and the 15th of the month.

No small wonder you can't figure out the relationship. There isn't any.

The 15th of a month is nothing more than an arbitrary, pre-assigned date for payroll distribution. Sometimes payday is long after the end of the corresponding pay period. Sometimes it's coincidentally concurrent with the end of the pay period. Other times — and unlike any of the other pay cycles used at Georgia Tech — the academic pay cycle pays an individual for days not yet worked. For example, an academic-paid GRA who received a paycheck on January 15 received pay for the first one third of winter quarter, which means he was paid two weeks before the end of the corresponding pay period of January 3-29.

The only way to keep up with it is to keep a copy of the academic payroll calendar near at hand.

Academic-paid GRAs work fewer days by virtue of those long breaks between quarters; therefore, don't they earn more than if they were biweekly paid?

No, but this is a remarkably common misconception. Academic-paid employees do, indeed, work fewer days than fiscal- or biweekly-paid employees, but their earnings are directly proportionate.

An academic-paid GRA who is working at one third time (which we generalize to 160 hours per quarter, regardless of the length of the quarter) and who is being paid a quarterly stipend of $2,400 for that one third time has an equivalent annual full time salary of $28,802. Here's the proof: $2,400 divided by 1/3 x 4 quarters = $28,802 a year.

But at the same rate of pay and the same work hours, the equivalent annual full time salary that same GRA would earn on the biweekly pay basis would be $31,200. Again, the proof: $2,400 divided by 160 = an hourly rate of $15.00 per hour. $15 x the 2,080 hours during FY 90 = $31,200.

In an institution as vigorously state audited, federally audited, and internally audited as we are, trust me when I say that nobody is ever going to be paid something he hasn't earned.

My academic-paid GRA worked more than one third time this month. Why can't I increase his pay by reporting that additional time on his timesheet?

First, did your workaholic work more than one third time this month or did he work more than one third time during the corresponding pay period? Regardless, he shouldn't have. The amount of time a GRA is allowed to work is approved by the school director of his major school, and any increase or decrease in that work schedule also requires the approval of the school director. The approvals are obtained by way of a Personal Services Form, the infamous PSF.

Second, your GRA's pay is driven by the information on the PSF, not the timesheet. Academic-paid employees are salaried employees (just like fiscal-paid employees), which means that each whole paycheck will be computer-generated for the same dollar amount month after month until the end of time or until another PSF increases that dollar amount by increasing the percent of time worked, decreases that dollar amount, changes the employee to a different pay type, or terminates him.

The GTRI timesheet for an academic- or fiscal-paid employee does nothing except designate to which GTRI account(s) the computer-generated dollar amount of the paycheck is to be expensed.

Biweekly paid employees (blue timesheets or green timesheets) are the only employees in GTRI whose paychecks are determined by what they report on their timesheet.

Personnel Tip of the Month: Have you been awarded a degree since you came to work at GTRI? Did you let HRD know about it via your lab's or department's Administrative Assembly rep? Statistics regarding the educational level of GTRI's faculty and classified employees are among the most important numbers HRD cranks out. Even if no pay increase is associated with your new degree (an Associate degree or higher), be sure you let HRD know about it through your lab director's or department manager's office. If in doubt, give us a call, and we'll verify the degree level your records currently show.

NASA

(from page 1)

Earth and Atmospheric Sciences, and Mechanical Engineering. He also has agreements with consultants from other universities and aerospace firms such as Lockheed and Bell Helicopter to participate in the work as needed.

"We are elated to be awarded this contract in competitive bidding," Dr. Ahuja says. "It is very rare to get 6.1 basic research awarded on a task order contract, especially to a new program just starting out, as ours is at GTRI.

This is the fourth contract Dr. Ahuja's group has received since the aeroacoustics program started last summer. They are currently conducting a systematic study of the relative performance of 10 noise suppressors operated at supersonic speeds under a grant from NASA-Lewis. Another NASA-Lewis grant deals with enhancement of mixing in heated jets. A third program involving automotive noise reduction is supported by Ford Motor Company.

Have Facts, Will Travel

As plans continue to be made for the restructuring of GTRI, it is only normal for employees to have many questions, particularly as to how it will affect them. The Countermeasures Development Division of SEL recently had a meeting to discuss just that. GTRI Executive Associate Director Bob Shackelford attended the meeting to outline the plan and to answer questions. He brought back useful suggestions from the meeting to share with the various restructuring committees. Other GTRI units have been briefed by other members of the OOD senior staff.

To schedule a meeting for someone in OOD to give an authoritative presentation to your unit, contact Assistant Director Pat O'Hare for arrangements.

PROFESSIONAL ACTIVITIES

ECONOMIC DEVELOPMENT LAB

On January 27, as part of Futurescape, **Carol Aton** gave a talk on "Engineering: A Career with Opportunities" to 25 high school students.

Melanie Largin of the Rome Regional Office got her PE certification in February.

At the World Congress on Asbestos Abatement in Miami, **Mark Demyanek** presented a session on asbestos roofing removal on January 24.

David Swanson was a panelist at a meeting on the 8(a) Transitional Management Assistance Program hosted by the University of Georgia Small Business Development Center January 25. He discussed the Economic Development Division's mission, capabilities and areas of expertise.

Alan Pashkevich spent the latter part of January in Costa Rica, identifying the industrial sector's energy conservation potential. His effort was part of a preliminary Least-Cost Utility Plan for that Central American country. An LCUP addresses energy conservation as an active part of an electrical utility's service plan, with investment in conservation viewed just as viable as investment in additional generation capacity.

In January, the Economic and Marketing Services Branch launched a new quarterly newsletter, *Economic Development Research Focus.* The publication will highlight efforts of Tech's Economic Development Research Program, profile individuals statewide who are active in economic development, and convey information about economic development issues affecting Georgia and its communities.

ELECTROMAGNETICS LAB

Rick Peterson has been appointed chairman of the International Neural Network Society special interest group on speech.

ELECTRONICS & COMPUTER SYSTEMS LAB

John Atha recently presented an invited paper, coauthored with Jim Coleman, for the Electronic Industries Association at the NATO Air Forces Armament Group in Brussels, Belgium. The paper's title was "NATO Interoperability Issues for Penetration Analysis Software in Existing Mission Support Systems."

ENERGY & MATERIALS SCIENCES LAB

Kathryn Logan has been awarded two patents: "Process for Making Highly Reactive Sub-micron Amorphous Titanium Diboride Powder," U.S. Patent #4,888,166 on December 19, and "Shaped Refractory Products and Method of Making Same," U.S. Patent #4,891,337, on January 2.

Logan served as Poster Session chairman at the 14th Annual Conference on Composites and Advanced Ceramics, January 14-17, at Cocoa Beach (FL). As chairman of the Awards Committee, Engineering Sciences Division, she also implemented new awards programs for the Best Poster and the Best Overall Presentation, in both Student and Non-Student categories.

At the same meeting, **Jed Lyons**, a recent graduate student under Tom Starr, received the First Place Best Student Poster Award for "Finite Element Studies of Crack Deflection in Ceramic Composites." **Jack Lackey** chaired a session entitled "Processing/Microstructure/Property Relations in Fiber Reinforced CMCs—Processing."

Tom Starr presented two papers at the meeting: "Reaction Sintered Silicon Nitride Composites with Cloth Lay-up Reinforcement," coauthored by **Joe Harris, Dave Mohr**, and **Jed Lyons**, and "Three-Dimensional Model of Isothermal Chemical Vapor Infiltration for Ceramic Composites."

RADAR & INSTRUMENTATION LAB

Jerry Eaves is coordinating two presentations of the "Principles of Modern Radar" short course at Warner Robins AFB (GA) and Picatinny Arsenal (NJ) in February and March. Participating in the courses are **Fred Nathanson, Jim Kurtz, Jim Echard, Mark Richards, Neal Alexander, Bill Holm, Jim Scheer**, and **Nick Currie.**

Jim Scheer coordinated a successful new short course entitled "Coherent Radar Performance Estimation" at the Cobb County Research Facility in January. **Ted Lane, Jim Kurtz, Jim Scheer, George Ewell, Eric Sjoberg, Mark Richards, Sam Piper, Joe Bruder, Mel Belcher**, and **Tracy Wallace** lectured in the course.

The Ft. Monmouth Office gave a very successful demonstration of the REMBASS System for Forward Area Air Defense (FAAD) System in January. Attendees included members of the Project Managers' Office EW/RSTA and of the Combat Office ID/EW Division.

SYSTEMS & TECHNIQUES LAB

Scott Gleason attended the 1990 meeting of the IRIS Specialty Group on Targets, Backgrounds and Discrimination. He coauthored a paper, "Methods for the Comparison and Extrapolation of Sensor Acquisition Performance Against Foreign and Surrogate Targets," that will be published in the minutes of the meeting.

Istvan Nogradi and **Bill Dittman** gave a series of five papers on High Voltage Modulators at the 1989 High Voltage Workshop held at Myrtle Beach Air Force Base (SC) October 17-19. Coauthors were **Steve Chastain, Allan Williams, Joe Hurst,** and **Chris Addicks**.

In November, **Richard Ivey** represented GTRI and ANSI at an international ISO-IEC/SCF meeting in Seattle (WA). During the meeting, he was named project editor of an ongoing effort, and he is under consideration for an appointment as Working Group Convener. SCF is concerned with developing standards in the area of information systems engineering.

PERSONNEL NEWS

ECONOMIC DEVELOPMENT LAB

Robert Hendry is a new chemical technician I in the Environmental Monitoring Research Branch. **Jim Smith** has departed Georgia Tech.

ELECTROMAGNETICS LAB

The Electro-Optics Division welcomes two new scientists. SRS **Dr. Daryl T. Lawton** has a joint appointment with the School of Information and Computer Science, where he teaches graduate courses as an assistant professor. He comes to Georgia Tech from ADS in Mountain View (CA).

Charles P. Carstensen is a new RS II who formerly worked at Quest Research and IIT Research Institute. He received his master's in physics from Ohio State University.

EOD also said good-bye to GRA **Zelda Gills**.

ELECTRONICS & COMPUTER SYSTEMS LAB

Welcome aboard to new student assistant **John Dishman.**

Farewell to **Joseph Hrycysyzn**, who terminated January 31.

SERVICE DEPARTMENTS

Accounting: **Kimberly Toatley** is a new accountant II, transferring from ECSL, and **Corrine Cloud** is a new accounting assistant, transferring from Financial Aid.

Human Resources: **Lynn Gay** has been promoted to personnel assistant II, and **Linda Hunnicutt** has been hired as a personnel assistant I. **Geri Holder, Willie Hill,** and **Debbie Samuelson** have terminated.

Research Security: Welcome to **Betty Okoku,** secretary, and to **Jennifer Tate**, security specialist.

Facilities Management: **Delora Gould** has been promoted to data collections specialist.

Mechanical Services/Instrumentation & Calibration: **James Nowell** has transferred to Electrical Engineering.

Caulk (from page 1)

conductive sealants shield the plane from stray electromagnetic signals issued by sources such as broadcast towers or enemy aircraft.

Daher and Gooch researched two related issues: the validity of a military specification requiring aircraft sealants to be highly conductive, with less than 2.5 milliohms of electrical resistance; identification of low-resistance, high-performance materials.

They applied various selected sealant materials to four metal test joints. As a control, no sealant was applied to a fifth joint. They subjected the joints to electromagnetic signals to determine shielding effectiveness and used a Kelvin bridge milliohmmeter to measure dc resistance. Corrosion tests were performed in a salt fog chamber. Silver-coated aluminum and aluminum/nickel fillers showed little or no sign of corrosion after 1,000 hours in the salt fog, and demonstrated protection from electromagnetic pulse/electromagnetic interference.

Their research showed no direct correlation between dc resistance and shielding effectiveness of metal bonds. Their findings did support the validity of the 2.5 milliohms resistance requirement in that these bonds tended to give a high degree of protection from electromagnetic fields.

Child Care Fair Set

Georgia Tech will hold a Child Care Fair Thursday, March 15, 10 a.m.-3 p.m., in the Student Center ballroom. On hand will be day-care center reps and family day-care providers, information on care for mildly ill children, and a baby-sitting registry.

PERSONAL NOTES

EDL: **Carol Carmichael** has married former staffer Steve Foley. **Gayle Warren** has been invited to join the Golden Key Honor Society at Kennesaw State College.

ECSL: Welcome back to **Beverly Cooks,** who has recovered from a recent accident. Congratulations to Toni and **Jacob Rhodes** on the arrival of their son, Christopher Graham, December 30.

HRD: Condolences to the family of **Dennis Wanless**, former personnel assistant I, who passed away January 31.

RAIL: Sylvia and **Herman Pardes** have a new grandson, Ian, born to Herman's daughter, Erika Schon, January 24. Congratulations to **Michael Brinkmann** on the birth of his son, David Michael, January 28.

RAIL extends sincere condolences to **Tracy Wallace** on the death of his brother, Dale, on February 4.

STL: Sympathy is extended to **Helen Hunt**on on the death of her husband, Bob, on January 16. Congratulations to Robert and **Susan Nowell** on the birth of a son, Robert Lester, February 4.

the GTRI connector

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