GEORGIA INSTITUTE OF TECHNOLOGY — OFFICE OF CONTRACT ADMINISTRATION

PROJECT ADMINISTRATION DATA SHEET

[X] ORIGINAL [ ] REVISION NO. ____

Project No. A-3460 GTRI/~~Lab~~ DATE 3-11-83

Project Director: F. B. Dyer ~~School~~/Lab SEL

Sponsor: Lanier Business Products, Inc., 1700 Chantilly Drive, N.E., Atlanta, Georgia 30324

Type Agreement: P.O. No. 057279

Award Period: From 12-7-82 To 6-6-83 (Performance) 6-6-83 (Reports)

Sponsor Amount: Total Estimated: $ 10,000 Funded: $ 10,000

Cost Sharing Amount: $ None Cost Sharing No: —

Title: Development of a Management Information Systems (MIS)

ADMINISTRATIVE DATA OCA Contact Don Hasty

1) Sponsor Technical Contact:

Mr Bill Kelly
Vice President, Engineering
(above address)
phone 329-8000

2) Sponsor Admin/Contractual Matters:

Mr John Broome
Controller, Computer R+D
(above address)
phone 329-8000

Defense Priority Rating: N/A

Military Security Classification: N/A

(or) Company/Industrial Proprietary: N/A

RESTRICTIONS

See Attached N/A Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval — Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of $500 or 125% of approved proposal budget category.

Equipment: Title vests with N/A - None proposed

COMMENTS:

COPIES TO:

Research Administrative Network	Research Security Services	Research Communications (2)
Research Property Management	~~Reports Coordinator (OCA)~~	Project File
Accounting	GTRI	Other F. Dyer
Procurement/EES Supply Services	Library	Other

FORM OCA 4:781 (Rev 982)

GEORGIA INSTITUTE OF TECHNOLOGY OFFICE OF CONTRACT ADMINISTRATION

SPONSORED PROJECT TERMINATION/CLOSEOUT SHEET

Date 4/10/84

Project No. A-3460 ~~School~~Lab SEL

Includes Subproject No.(s) N/A

Project Director(s) F. B. Dyer GTRI / ~~GTRI~~

Sponsor Lanier Business Products

Title Development of a Management Information System (MIS)

Effective Completion Date: 6/6/83 (Performance) 6/6/83 (Reports)

Grant/Contract Closeout Actions Remaining:

- [ ] None
- [X] Final Invoice or Final Fiscal Report
- [ ] Closing Documents
- [X] Final Report of Inventions Patent Questio nnaire included for Project Director
- [ ] Govt. Property Inventory & Related Certificate
- [ ] Classified Material Certificate
- [ ] Other

Continues Project No. N/A Continued by Project No. N/A

COPIES TO:

Project Director
Research Administrative Network
Research Property Management
Accounting
Procurement/EES Supply Services
Research Security Services
Reports Coordinator (OCA)
Legal Services
Library
GTRI
Research Communications (2)
Project File
Other

Form OCA 60:1028

ENGINEERING EXPERIMENT STATION
Georgia Institute of Technology
A Unit of the University System of Georgia
Atlanta, Georgia 30332

September 19, 1983

Lanier Business Products, Inc.
1704 Chantilly Drive, NE
Atlanta, Georgia 30324

Attention: Mr. John Broome
Comptroller, Computer R&D

Subject: Development of GTIMS (PO #057279)
Georgia Tech Project A-3460
Final Report

Dear John:

The purpose of this letter is to serve as a final report on the subject purchase order. As you know, the contract was intended, primarily, to serve as a means to allow for coordination between Lanier Business Products, Inc., and Georgia Tech during the developmental stages of the Georgia Tech Information Management System (GTIMS) and for the investigation of the use of the Lanier EZ-1 with GTIMS.

The objectives of this program were successfully met. Prior to the completion of the first phase of GTIMS development in June, the feasibility of the EZ-1 for use with the pertinent CP/M programs (i.e., Wordstar, Peachcalc, dBase II, Xtalk, etc.) was demonstrated by Georgia Tech to various Lanier personnel (both Engineering and Marketing) and Georgia Tech EES is currently using the EZ-1 as a key system in the data entry and time reporting portions of GTIMS. The total acquisition of Lanier EZ-1's by Georgia Tech now exceeds 70 units. EES is currently using its EZ-1's in virtually every administrative unit. The attached Users Manual is an illustration of some of the activity which involves the EZ-1.

Further development of the GTIMS system involves business graphics and large addressable memory, neither of which is easily available on the Z-80 based EZ-1 and, thus, most of the current efforts at extension of GTIMS is involving the IBM-PC; however, we would welcome the opportunity to work with Lanier L-100 and subsequent products which are IBM-PC compatible and which have the performance needed to serve as true "work-station" systems.

We have made available to Lanier technical personnel full access to the GTIMS development data and have worked closely with individuals such as John Goldwaithe. While we consider the first phase of our interaction (as represented by the subject PO) to be concluded, we are continuing to work with your people, both as a BETA test site for Lanier software and in the identification of potential, funded research activities.

The relationship has been very rewarding to us and, hopefully, valuable for Lanier. We look forward to continued interaction between the organizations. I will be continuing to help promote the dialog and would be happy to assist you in any way that I can.

Yours truly

F. H. Dyer
Principal Research Scientist

cc: OCA (Don Hasty)
SEL (Marti Boyce)
A-3460 File

Enclosures: User's Manual for Timesheet Entry
Station News - June 1983 Issue

GTIMS

Georgia Tech Information Management System

User's Manual for Timesheet Entry

GETTING STARTED

1. Turn on your machine. The power switch is on the right-hand side near the front. If you have a dual-floppy machine (with two doors on the front), you should also have two floppy disks. Load the "A" disk in the left-hand door and the "B" disk in the right-hand door. The message "Ready printer and type RETURN (or "D" to discard output) ->" may appear; if so, type a "D". You should now have an "A>" prompt on your screen.

2. Turn on GTIMS. Simply type "do gtims" and press RETURN.
   For example: A>do gtims RETURN

You may be asked for today's date; enter it and press RETURN. (You do not have to enter the slashes.) The main menu will appear. If you think of GTIMS as a workbook, then the menu is like the table of contents. GTIMS has a series of menus and a number of different tasks. Only two tasks will be discussed here: how to enter information from hourly time sheets and salaried time sheets. To get to the Time Reporting Menu, type "TM", and press RETURN.

The screen will show you the following menu:

```
================================================================

   ***     Georgia Tech EES / GTIMS Menu Driver: 06/01/83    ***

                          Curent MENU : TM

    Option          Description

      SP            Enter Time sheets for Salaried Personnel
      HP            Enter Time sheets for Hourly Personnel
      PO            Print out time sheets - salaried
      PH            Print out time sheets - hourly
      ED            Edit all time sheets, print error report
      SU            Generate time summary files
      PS            Print summary reports from file
      NE            Enter information for new employee


   /R:  Return to Previous Menu      /C:  Enter System Command
   /B:  Return to Main Menu          /Q:  Quit to System

            Option:

================================================================
```

If you want to enter percentage time sheets for salaried employees, type SP and RETURN. If you want to enter time sheets for hourly employees, type HP and RETURN. The directions for these two menu options are described below.

SP - ENTERING PERCENTAGE TIME SHEETS (SALARIED)

This section describes how to enter time sheets for salaried employees who report the percent of time worked. You get to this task from any menu by typing in SP and pressing RETURN.

After entering SP, your screen will ask you to enter the month and year the time sheet covers.

For example: 06/83 RETURN (but do not type the slash.)

If you make a mistake and notice it before you press RETURN, correct it by using the backspace to move the cursor directly over the mistake. Then simply type over the mistake. If you enter a month that does not exist, such as 19, you will get the following error message:

```
***Invalid Date...Enter Again***
   Waiting
```

If you get this error message, the cursor will be flashing next to "waiting." Press RETURN and reenter the correct month and year.

If you have successfully entered a valid date, your screen will clear, then will show you the time sheet form below. This is similar to the actual time sheets that salaried employees fill out.

```
+--------+-------+-----------------------------------+------+----------------+
! Empl# ! Mo/Yr ! Employee Name (Last, First, Middle) ! Div. !     Total %    !
+--------+-------+-----------------------------------+------+----------------+
! Project No. !    % of Time    !            Description of Work              !
+--------------+-----------------+---------------------------------------------+
!   V - 100    !                 ! How many days of Vacation?                  !
!   V - 200    !                 ! How many days of Jury/Military Duty?        !
!              !                 !                                             !
!              !                 !                                             !
!              !                 !                                             !
!              !                 !                                             !
!              !                 !                                             !
!              !                 !                                             !
!              !                 !                                             !
!              !                 !                                             !
+--------------+-----------------+---------------------------------------------+
```

EMPLOYEE'S NAME

When a time sheet form has appeared on your screen, the cursor will be asking you to enter an employee's name. GTIMS stores employee names by last name and two initials. (i.e. JONES D L). You may, if you wish, type only the first few characters of the name and the system will try to find it for you.

For example, if you need to enter the name "Smith, John L.", you might decide to enter "smit". (You need not capitalize.) The system will search its file for all names starting with "SMIT". Perhaps it finds five names beginning with these letters in the file. It will then print these five on your screen below the time sheet with a number beside each. You can look through this list for the Smith, J.L. that you want to enter and enter the number beside the name.

If you enter only "sm", the system will search its file and perhaps will find 15 or so names beginning with SM. If this happens the screen will tell you that the names are too numerous to list and you should reenter more of the name.

If you find a name that is not on file, your employee file must be updated. To do this you must get back to the a menu (by entering /F) and enter NE (new employee). You should wait, however, until you have a number of new employees to enter; the NE program takes a few minutes to run.

If the employee's time sheet has already been entered, it will appear on your screen and you can make changes or additions using the instructions in this section.

After you have successfully entered an employee name, the employee number, the month and year, and the division number will be entered automatically. The cursor will move to the TOTAL % item. This indicates the percent of time an employee is working. This information should be on the top of the hand written time sheet you are entering. If the percent already displayed is correct, just press RETURN, otherwise, enter the correct percent and press return. If the percent you want to enter is less than 100% you must first enter a space or a zero. You do not have to enter a % symbol and you don't have to enter zeros after the decimal point.

After you have successfully entered the total percent, your screen will automatically enter the V-100 project number for the percent of vacation time and the V-200 project number for the percent of jury/military duty. These will be entered in the project number column. Also, an arrow will be pointing to the V-100 line.

You are now ready to begin entering time sheet information. To do this, notice that the cursor is blinking at the prompt "ENTER OPTION:" This prompt is asking you to enter one of the letters from the menu across the bottom of the screen. This menu enables you to move the arrow from line to line on the time sheet, and to delete, change, or save information you have entered. An explanation of the menu options follows.

I-Input/Edit The I option is used to input (enter) or change one line of information on the time sheet. If the line is blank the computer assumes you want to enter new information. If the line already has information entered, the computer assumes you want to change that line.

E-Enter The "E" option is exactly like the"I" option, but it skips to the next line by simply pressing RETURN. This option is intended as a faster way to enter numerous lines of information.

N-Next The"N" option is used to move the arrow to the next line down.

B-Back The "B" option is used to move the arrow up one line, or backwards.

D-Delete The D option is used to delete a line. The line where the arrow is will be marked for deletion. The project number and description fields will be marked "DELETED".

S-Save The S option closes out the time sheet you've been entering. After this option is selected, a blank time sheet will be displayed and you can enter the next employee name or you can go to the menu by typing /F and pressing RETURN.

X-Abort The X option will erase all the information on the time sheet on the screen. Before the time sheet is erased you will get a prompt asking you if you are sure you want to erase. Press Y or N. Pressing any other letter will move the cursor back to the ENTER OPTION.

Use these options to position the pointer to the appropriate line and enter information on it. You do not have to press RETURN after entering one of these letters.

ENTERING VACATION TIME

To enter the number of vacation days, first select the ENTER OPTION of "I" for INSERT. You will be asked, in the column labeled project description, if you will enter the number of days or the percent of vacation time.
The cursor is blinking over the letter P. If the time sheet you are working with has the percent of vacation, tell the system you will be entering the percent of vacation by simply pressing RETURN. If the time sheet has the number of days of vacation indicate this by pressing D and RETURN. If you enter the number of days, the system will automatically convert it to percent and enter it in the percent column.

Next,the screen will ask you to enter the actual dates of vacation. If you do not have this information on the time sheet, press RETURN. If the time sheet indicates no vacation, press RETURN and the system will enter zero percent vacation time.

ENTERING JURY/MILITARY DUTY

Now that you have entered the percent of vacation, the cursor will again be blinking over the ENTER OPTION. You need to move the arrow to the next line to enter the jury/military duty. You can do this in two ways. 1) Use the ENTER OPTION "E". This will move the arrow to the next line automatically when you first enter it and on subsequent lines you can move the arrow to the next line by pressing only return. 2) Use "N" to move the arrow to the next line, and then use "I" to enter the information.

When you have moved the arrow to the line V-200, you are ready to enter jury/military duty. You do this just like you entered the vacation information. (See instructions above.)

PROJECT NUMBER

After you have entered vacation time and jury/military duty, you are ready to begin entering project number information. Using the ENTER OPTIONS, position the arrow at the appropriate line. Now type in the first project number listed on the time sheet you are entering. Do not enter the dashes in the project numbers -- they are supplied for you. Notice that if the project number is only three digits long, you must add a space to make the number fit between the dashes. That is, enter "H-300-103" as "H- 300-103". The system will add "000" if you do not specify an extension.

% OF TIME

Enter the percent from the time sheet and press RETURN. If the percent is a whole number, you do not have to enter zeros after

the decimal point. If an employee has spent 100 percent of his/her time on one project, simply press RETURN and the 100 will automatically appear in the percent column. (You cannot type in "100.00" in the percent column.) A running total is kept at the top right of the time sheet, and the percent of time remaining is displayed at the bottom of the time sheet. In the percent column, you can press RETURN to accept the percent remaining and finish out the time sheet.

DESCRIPTION OF WORK
Enter whatever is on the time sheet. Press RETURN to enter. You do not have to enter any description. Simply press RETURN to move the cursor.

Now, you can continue to enter time sheet information for more projects in the same way. Use the ENTER OPTIONS to move the arrow to the line you need. Use the delete option to correct any errors you notice. Entering a period (.) and RETURN will copy any information from the line above.

SICK LEAVE
When you have finished entering project numbers and percent worked, you are ready to enter sick leave time. Do this by selecting the ENTER OPTION of "S" for SAVE. (The arrow can be on any line when you press the "S.") The screen will add a space on the bottom of the time sheet and ask you to enter the number of sick days. If there are none, just press RETURN. Otherwise, enter the actual number of sick leave days. Next, the screen will ask you for the dates, if necessary. Enter the actual dates if the time sheet has included them. Press RETURN.

After you have entered sick leave days, the system will save the information you have entered. The time sheet will disappear and you will see a blank time sheet. You can begin entering another percentage employee's time sheet, or press /F and RETURN to get to the last menu you saw.

ERROR CHECKING

As you enter each line, GTIMS will check for certain errors and will show you a green highlight over the error. You should correct any errors before moving on. Type "I" to select the input/edit option. Then type in the correct line. However, the system will not check for all errors. Others will be caught in a batch editing process and must be corrected in a later step. The more errors you catch and correct in the initial input, the less work will be involved in correcting later.

If you notice errors before you finish the line, you can use the backspace key to move the cursor back and type over the error. (Another aid to cursor movement that you may want to use as you become more familiar with GTIMS are the arrows on the right of your keyboard. These will move the cursor one character to the left or right. The up and down arrows will move the cursor from field to field.

HP - INPUT HOURLY TIME SHEETS

This section describes how to enter information for hourly time sheets. You get to this task by entering HP (for hourly employees) from any menu. HP is used to enter time sheets for staff and students.

BILLING MONTH

After you have entered HP, your screen will ask you to enter the month and year on the time sheet you want to enter. Single digit months must be preceded by a zero.

For example: 05/83 RETURN

After you enter the month and year on the time sheet, your screen will show you the valid pay periods for that month and year. (Pay periods for hourly employees end on every other Wednesday. Time periods for staff end on the alternate Wednesdays.)

Now, enter the number associated with the pay period of the time sheet. The correct pay period should be on the time sheet you are entering.

When you enter one of the numbers displayed, the screen will clear and show you a time sheet form (below) similar to the actual time sheets that hourly employees fill out.

Empl#	Employee Name (Last, First, Middle)	Unit	Period

Project No.	Date	Hours	Description of Work

TOTAL HOURS:	

EMPLOYEE NAME

The screen will be asking you to enter an employee name. The instructions for entering the employee name are the same as for the salaried percentage employees. You only need to type in the first few letters of the employees name. (See section SP above.)

If you enter a name that is not in the file, you will get the following message:

NON-REGISTERED NAME--HIT RETURN TO CONTINUE

This message indicates that you will need to enter this employee name in your file. Do this by returning to any menu and entering NE (for new employee). Wait until you have a number of unregistered names, however, before you go through this process.

If the employee's time sheet has already been entered, it will appear on your screen and you can make changes or additions.

After you have entered an employee name, the employee number, the month and year and the division number will be entered automatically.

Now, you will notice the cursor is pointing to the first line in the project number column. You are now ready to begin entering time sheet information. As in the SP command, you may use the menu options to position the pointer at the appropriate line and enter information. See page 5 for a detailed explanation of the menu options.

PROJECT NUMBER

To begin entering time sheet information, notice that the cursor is blinking at the prompt **ENTER OPTION**. One of the letters from the menu across the bottom of the screen will be blinking at the cursor. This is the default letter. If you want this option, simply press RETURN. If you want another letter, press it. You do not have to press RETURN after entering one of these letters.

To enter new information press either " E" for Enter or "I" for Edit/Insert. Notice that the cursor is now blinking in the project number column. Enter the project number as it appears on the time sheet. The program will add the -000 if you don't type it. It will also enter a dash after letter prefixes.
You must press RETURN after typing the project number.

DATE
Enter the month and day on the time sheet . The slash will be added for you. Note that a leading zero or space is necessary. You can enter only numbers in the date field. After you have entered the date, the cursor will automatically move to the hours column.

HOURS
Enter the hours on the time sheet. Again, a leading zero or space is necessary for numbers less than 10 hours, and the field will not accept characters other than numbers. The decimal point will be inserted for you. For example, to enter 4.5 hours, you could type "045". After you have entered the hours, the cursor will automatically move to the description of work column. If you enter more than 80 hours, the system will mark this as an error.

DESCRIPTION OF WORK
Enter the description as it is on the time sheet and press RETURN.

Now that you have entered one line on the time sheet, you can continue entering additional lines in the same way. Typing a period (.) and pressing RETURN will copy the entry from the line above.

You must use the menu codes along the bottom of the screen to move the cursor from line to line. If you are entering numerous lines of information, you may find it quicker to choose "E" as your enter option. This option will enable you to move the cursor to the next line by simply pressing RETURN. If you are in the "I" option you must enter "N" to move the cursor to the next line, and then enter "I" again to type in the next line.

ERROR CHECKING

GTIMS will check for certain errors and will show you a green highlight over the error.You can correct an error by moving the cursor to the line you want to correct. Type "I" to select the input/edit option. Then type in the correct line.(However, the system will not check for all errors. Others will be caught in a batch editing process and must be corrected in a later step. The more errors you catch and correct in the initial input, the less work will be involved in correcting later.)

You can correct any errors that you notice by using the backspace key to move the cursor back. Type over the error. (Another aid to cursor movement that you may want to use as you become more familiar with GTIMS are the left and right arrows (to the right of your keyboard). These will move the cursor one character to the left or right. The up and down arrows will move the cursor from field to field.)

WHEN YOU ARE THROUGH

When you have finished entering all the information from the time sheet and want to move on the next time sheet, press S to save the information you have entered.

The screen will change to a blank time sheet form and you can begin entering another employee time sheet. If you are through entering time sheets and want to get back to a menu, press /F and RETURN.

EES

Station News

Georgia Tech Engineering Experiment Station

Volume 13 Number 10 June 1983

Steve Losser (left) and Jim Thomas pause outside the Hinman suite that houses the minority business assistance activities of EES. (Photo by Charles Haynes)

Choctaw Tribe Gets EDL Assistance

Economic Development Lab staff members working with the Rural Assistance Program (RAP) have been involved in a marketing effort that is bringing a wide variety of new firms into the program. RAP Director Jim Thomas has worked closely with Ed Bethea of EDL's Technology Utilization and Commercialization Center, directors of the EDL field offices, and Steve Losser of the Business Development Division outreach staff to identify potential client firms.

The minority-owned firms requesting assistance include not only those involved in technological applications, but also a grocery operation, a restaurant and convenience store, a retail liquor store, a pork processing plant, and even more novel, the Tribal Council of the Mississippi Band of Choctaw Indians.

Losser describes the situation as follows: "More than 2,000 people live in the Pearl River Indian Community on the Choctaw Indian Reservation. Pearl River is the second largest community in the county, and provides ample employment opportunities at the Bureau of Indian Affairs schools, at the reservation hospital, or in three local industries. However, the community's shopping facilities consist of one small convenience store. Therefore, most people shop 10 miles away at the county seat."

Losser noted that there has been a dramatic increase in disposable income for the average Choctaw since 1978. Most of these dollars, however, are spent at retail businesses located outside the reservation. A high priority for the Tribal Council is to reduce this drain of economic power. This is difficult, since most individual Choctaws lack the financial assets to develop a business.

To address both problems, the Tribal Council has proposed to develop a retail shopping mall on the reservation for occupation by Choctaw-owned retail businesses. The Council will provide funding for the project. RAP assistance will include a feasibility study to determine if a retail shopping center located on the reservation is a viable business venture.

Johanna Williams

GTIMS Starts With Time Sheets

The first module of a powerful management tool for EES project directors is at the starting gate and ready to go.

On June 1-2, laboratory secretaries and administrative coordinators participated in the first full-scale test of the Time Reporting module of the Georgia Tech Information Management System (GTIMS) which is currently being developed at EES. In a workshop setting, they learned how to put time sheet information on the computer. The data will be used to report to project directors on a timely basis actual versus budgeted personal services charges, in terms of man-hours as well as dollars.

At the end of June, another joint data-entry session will be held. Soon, each research laboratory and division will have its own interactive microcomputer terminal to enter time sheet and other project data on a regular basis. The microcomputers will communicate with the EES VAX minicomputer, which will aggregate the data to provide an overall EES project data base.

Fred Dyer, Dean Spencer, and Ed Anderson are directing the GTIMS development project, with overall guidance from EES Associate Directors Gerald Carey and Howard Dean. Michael Furman, Lindsay Morris, and Andy Cranfill are writing, testing,

(Continued on page 3)

1983 Promotions

Congratulations to the following 35 EES employees, who are being promoted, effective July 1, to:

Principal Research Engineer/ Scientist:	
Neal T. Alexander	RAIL
Robert A. Cassanova	EMSL
David S. Clifton	EDL
Akkihebbal R. Ravishankara	EML
Charles T. Rucker	EML
James A. Scheer	RAIL
Senior Research Associate/ Engineer/Scientist:	
Harry W. Andrews	SEL
Richard S. Combes	EDL
Ronald E. Creswell	SEL
Larry R. Edens	EDL
Walter A. Hendrix	TAL
James D. Higgins	STL
Margaret M. Horst	RAIL
A. Perry Schwartz	RAIL
David D. Tarkowski	EML
James L. Walsh, Jr.	TAL
William R. Youngblood	SEL
Research Associate/Engineer/ Scientist/Technologist II:	
Anthony M. Andruzzi	ECSL
William W. Butler	ECSL
John K. Daher	ECSL
Constance R. Foulke	ECSL
Linda L. Harkness	RAIL
Adrienne J. Harrington	SEL
Robert S. Hawkins	EDL
Henry Z. Jackson	TAL
Larry A. Jackson	ECSL
Anthony D. Jape	TAL
Kenneth E. Johnson	EDL
Casey C. Lang	ECSL
William L. Leverett, Jr.	STL
Walter S. Lewis	EMSL
John M. Nicovich	EML
Michael Shannon	RAIL
James T. Smith	RAIL
Terry E. Tibbitts	SEL

Booklet Wins Award

The *Millimeter Waves* capabilities booklet recently won an award from the National University Continuing Education Association in a competition sponsored by NUCEA's Information Services Division. The EES booklet placed third among 483 entries in the category, "Booklets best describing a program." The booklet was produced by the Research Communications Office in cooperation with the electronics laboratories.

Betty Bone: A Tech Pioneer

Elizabeth N. Bone, a programmer III in the Systems and Techniques Lab, died suddenly on May 4. She had worked at EES for over 30 years. She was a trailblazer in many ways. When she was hired in January 1953 as a technical assistant, she became the first female at EES in a purely technical position.

"We have never graduated a better student from Southern Tech; she has held her own with the men and is very outstanding." So said one of Betty Bone's letters of recommendation submitted with her Georgia Tech employment application in 1953.

Betty Bone wanted to attend Georgia Tech, but at the time she applied Tech did not accept women. She enrolled at Southern Tech instead, receiving an associate degree. By that time Georgia Tech was admitting women, and she entered the Electrical Engineering program. She nearly completed her degree, but the demands of having a family prevented her from finishing.

Betty worked on a variety of programs at EES during her long career. She matched millimeter waveguide components on the first millimeter radar built in the U.S.; she wrote computer software for near-field antenna measurements; and she was instrumental in developing design procedures for the offset waveguide junction invented by Searcy Hollis (now with Scientific-Atlanta).

Betty Bone saw many changes in technology during her Tech career and was able to adapt to all of them. She started taking antenna patterns before pattern recorders were invented. Pattern levels were read from a meter, written on paper, plotted on graph paper, and then connected with a curve. When pattern recorders were introduced, she used them. For the last several years, she predicted antenna patterns on a digital computer and validated these predictions with computer-controlled, digitally recorded pattern data taken on the Georgia Tech antenna range. Over the past 15 years, she was instrumental in developing the EES computer programs for reflector antennas.

Betty will be missed by all who knew her.

Berry Pyron

Harrison Resigns

Gordon R. Harrison has resigned from Georgia Tech to become Vice President/Components and New Technology for Electromagnetic Sciences. The Norcross, Georgia, based firm was founded by Tech alumnus John Pippin.

Dr. Harrison came to EES from Sperry Microwave Electronics Company in November 1971. He headed the former Applied Sciences Laboratory for seven years, working particularly in the areas of microwave integrated circuits, semiconductor devices, solid-state materials and components, and microelectronics. For the past four years, he has been a valuable member of the senior staff of the Office of the Director. He is a Fellow member of the Institute of Electrical and Electronics Engineers.

Dr. Harrison played a key role in organizing the Corporate Liaison Program at Georgia Tech, and served as its coordinator and chief liaison officer. Among the many ways that he served the Tech community were as secretary of the Faculty Honors Committee, member of the Self Study Steering Committee, chairman of the EES United Way campaign, EES/academic liaison on graduate research assistant placements, and as lecturer or supervisor in numerous short courses and training programs.

Brochure Reprinted

The promotional folder, *Research: Georgia Tech's Engineering Experiment Station,* has been updated and reprinted. If you need copies, call Research Communications, ext. 3444, and ask for the green "laser" brochure.

TAL Completes Biomass Fuel Studies

Both the Army Corps of Engineers and the City of Tallahassee have been looking at switching from natural gas and coal to cheaper woody biomass with the help of the Technology Applications Lab (TAL).

For the Corps of Engineers, TAL helped determine the feasibility of procuring biomass to fire wood boilers for three Army ammunition plants in Kansas, Indiana and Tennessee. They presently use natural gas and coal-fired steam plants to produce process heat for the manufacture of weapons and explosives.

Under a subcontract with the University of Alabama/Huntsville, TAL engineers Bill Bulpitt and Dave Harris researched the technology available for harvesting biomass and its cost. The overall objective was to ascertain whether a sufficient volume of biomass was available within a 50-mile radius of each plant, the feasibility of harvesting it, and the costs involved.

Bulpitt and Harris, assisted by Tom McGowan, also recently completed a study for the City of Tallahassee, Florida, on the feasibility of burning wood to generate electric power. The city currently uses natural gas and oil to produce power, but is seeking a cheaper fuel after 1985, when its present advantageous contract expires. The team estimates that by 1990, the cost of natural gas per million Btu will be nearly three times that of wood.

TAL's research engineers have been doing feasibility studies aimed at increasing the use of wood as a fuel for several years. Some of the installations they have assisted in Georgia are located at the Central State Hospital in Milledgeville, the Gold Kist soybean processing plant in Valdosta, the Integrated Products texile mill in Aragon, the Northwest Regional Hospital in Rome, and the Georgia Industrial Institute at Alto.

Lab personnel learn how to enter time sheet data into the EES management information system. (Photo by Warren Smith)

GTIMS (Continued from page 1)

evaluating and documenting software programs on the microcomputer end. John Lee and Margaret Hickey are responsible for the CYBER/VAX interface, with Hickey writing the program to translate the CYBER data into INGRES, a relational data base for the VAX. Barbara Turner advises the design team on the accounting system, and Gerald Mackey helps coordinate personnel and resources.

The microcomputers will use dBASE II, a powerful programming language. The programs will be menu-driven and easy to run. Commercial software is being purchased, with the design team writing the applications. Any CP/M or MS-DOS based system can be used.

The design team is developing other modules for the GTIMS. A Pre-Project Planner will help project directors lay out tasks and subtasks. A Material Request module will help them keep up with the progress of MR's through the procurement system. Other modules will deal with such matters as property control, security and technical performance.

Professional Activities

ECONOMIC DEVELOPMENT LAB

Johanna Williams gave an invited address on "Performance Improvement in a Textile Mill" at the Ninth Annual Convention of the Association for Behavior Analysis on May 27 in Milwaukee, Wisconsin.

Jim Muller was in South Korea May 12-June 21 providing industrial assistance on the Korea Credit Guarantee Fund project.

ENERGY & MATERIALS SCIENCES LAB

Bob Cassanova presented a paper on "Advanced Concepts for Conversion of High-Temperature Solar Energy" and chaired a session at MELECOM/83, the IEEE Mediterranean conference held in Athens, Greece, May 24-26. He reported that **Sid Firstman** (TAL) also presented a paper, and Vice President for Research **Tom Stelson** chaired a session.

SYSTEMS & TECHNIQUES LAB

Bill Dittman is co-inventor of a multiposition waveguide switch that has been awarded a U.S. patent.

TECHNOLOGY APPLICATIONS LAB

Charles Duke conducted a management training program for Chemical Products Company in Cartersville and participated in a similar program for Gulfstream America, Inc., in Savannah.

During May, **Bobby Cline** conducted a workshop on effective communications for the American Society of Hospital Food Service Administrators in Atlanta and taught a four-day course on instruction methods for industrial trainers at Swift Textiles in Columbus, Georgia.

At the joint convention of the Florida and Georgia Meatpackers Associations in Ponte Vedra Beach, Florida, on June 3-4, **Hank Jackson** gave a presentation on "Energy Conservation in Meat Packing."

At the June 1-3 meeting of the American Solar Energy Society in Minneapolis, **Tom McGowan** presented two papers: "Building Energy-Efficient Homes" and "Georgia's Industrial Wood Energy Program." **Bill Bulpitt** coauthored the latter paper, as well as one that McGowan presented at the June 19-23 meeting of the Forest Products Research Society: "Wood Gasification for a Large-Scale Chemical Plant."

Carol Aton has been appointed national publications chair for the Society of Women Engineers. She and **Keith Nelms** have coauthored with TVA personnel a book entitled *Safe and Sound Masonry Chimneys.*

SEL Gives Workshop For Lockheed

Personnel of the Systems Engineering Lab conducted an eight-hour Electronic Combat Workshop for Lockheed Georgia Company on May 25-26. George McDougal, John Gibbons, Tom Miller, Bob Beasley and Bud Sears gave presentations. More than 30 Lockheed engineers attended the workshop, which was presented under the auspices of Tech's Corporate Liaison Program, of which Lockheed is a member.

Walton Retires

Jesse D. Walton, Jr., an internationally known figure in high-temperature materials and solar thermal research, is retiring on June 30 after an illustrious 31-year career at EES.

A Georgia Tech graduate with a Bachelor of Ceramic Engineering degree, Walton built the ceramics research activity at EES from modest beginnings into the High Temperature Materials Division, which he headed from 1968 to 1975. His pioneering development of slip-cast fused silica for use in radomes and thermal protection systems for reentry vehicles led to the fabrication of the nation's largest ceramic radome, now on exhibit in the American Ceramic Society Museum in Columbus, Ohio. He edited the *Radome Engineering Handbook*, and was a radome consultant with Selenia in Rome, Italy, during a six-month leave of absence in 1975-76.

Walton returned to EES in 1976 as technical manager of solar energy programs. EES solar research had gotten started in 1971, when Walton initiated high-temperature materials testing at the 1000-kW solar furnace in Odeillo, France, in a cooperative relationship with the Centre National de la Recherche Scientifique that is still ongoing. He developed the program with NSF and ERDA (now the U.S. Department of Energy) that resulted in construction of the 400-kW Georgia Tech solar thermal test facility, which is the second largest such facility in the United States.

Walton also gained prominence in low-technology applications of solar energy to the needs of developing countries, with emphasis on Africa. He organized and served as local arrangements chairman for the Silver Jubilee Congress of the International Solar Energy Society, held in Atlanta in 1979.

Since 1981, Walton has been chief scientist of the Energy and Materials Sciences Laboratory. A Fellow of the American Ceramic Society, Walton is past chairman of the Ceramic-Metal Systems Division and a member of the National Institute of Ceramic Engineers. He is continuing his ceramic career as a private consultant.

Industrial Energy Service Offers Aids

TAL's Industrial Energy Extension Service (IEES) held two back-to-back workshops May 19-20 to help industries struggling with rising utility bills. The workshops, "Improving Boiler Operating Efficiency" and "Energy Measurement Instrumentation and Techniques," were held at the Howard Johnson Hotel adjacent to the Tech campus. Mike Brown and Joe Hoppe coordinated the workshops.

IEES has just started issuing a new series of Technical Briefs "designed to present Georgia industry with up-to-date information about new or underutilized technologies and practices that can lead directly to substantial energy savings," said IEES Director Hank Jackson. No. 1 is on "Industrial Lighting." Others to follow in June are on "Solid State Motor Controls," "Computer Energy Management Systems," Direct Digital Control," "Machnozzles," and "Coal Utilization."

Research Communications has moved from the Hinman Building to spacious offices on the second floor of the Savant Building. Come see us!

Strictly Personal

ECONOMIC DEVELOPMENT LAB

Gayle Hudson became Mrs. Bruce Warren on June 18.

At the Retirement and Awards Dinner, **Tze Chiang** received a Gold-T pin for 25 years of service to Tech.

ELECTROMAGNETICS LAB

Billy Livesay also received a 25-year Gold-T pin.

Walter Cox has been elected to Tech's Public Relations Committee.

RADAR & INSTRUMENTATION LAB

New employees are **James Edwards,** research engineer I; **Robert Loebach,** research engineer I; **John Trostel,** research scientist I; **Bruce Lavers,** electronics technician II; and **Robert Sandberg,** programmer II.

Terminating their employment were **Mike Shannon**, who has gone to Rockwell, and **James Smith**, who has gone to Lockheed.

OFFICE OF THE DIRECTOR

Arlene Edmiston has replaced **Kathy Barbay** as administrative secretary/receptionist.

Bill Howard has been elected to the Faculty Status and Grievance Committee.

SERVICE GROUPS

Accounting: **Linda Bearce** was married to Neal Maynard on May 14.

Personnel Services: **Joann Ward** has transferred to the Electronics & Computer Systems Lab as administrative secretary in the Electromagnetic Compatibility Division. **Linda Murphy** is a new personnel assistant I, transferring from the Nuclear Research Center.

Supply Services: New employees are **DeeAnn Reese,** clerk IV, and **Joyce Oram,** clerk-typist II. **Jerry Brown** was married on April 30, and **Junice Hall** was married on June 18.

SYSTEMS & TECHNIQUES LAB

Joe Parks has been elected to the Faculty Benefits Committee.

SYSTEMS ENGINEERING LAB

Catherine Powell and **Walter Addison** were married on June 4. **Tammy Sheffield** was married to David Paal on June 11. Best wishes to all.

Former co-op **Steven Cole** has joined the ESM Division as a research engineer I. **William Allen** is a new research engineer I in the Concepts Analysis Division.

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