

PROJECT ADMINISTRATION DATA SHEET

ORIGINAL REVISION NO. _____

Project No. G-37-606 GTRI/~~QWX~~ DATE 5 / 14 / 84

Project Director: Mark J. Christensen School/~~MatX~~ Math

Sponsor: Burroughs Corporation

Type Agreement: Agreement No. CPA 009 7584

Award Period: From 3/15/84 To 4/30/85 (Performance) 4/30/85 (Reports)

Sponsor Amount: This Change Total to Date

Estimated: \$ 330,000 \$ 330,000

Funded: \$ 330,000 \$ 330,000

Cost Sharing Amount: \$ 14,517.01 Cost Sharing No: G-37-314

Title: Investigation of a Network of Advanced Microcomputers into Research & Instructional Programs of the School of Mathematics.

ADMINISTRATIVE DATA OCA Contact William F. Brown ext. 4820

1) Sponsor Technical Contact: Dr. Sidney Adkins 2) Sponsor Admin/Contractual Matters:

~~X~~ Burroughs Corporation
University Sponsored Research Program
Room 4-18E
One Burroughs Place
Detroit, MI 48328

Defense Priority Rating: N/A Military Security Classification: N/A
(or) Company/Industrial Proprietary: _____

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 None proposed or anticipated.

COMMENTS:

COPIES TO:

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

SPONSORED PROJECT TERMINATION/CLOSEOUT SHEET

OK, 6/10

Date 9/10/86

Project No. G-37-606

School/~~GTX~~ Math

Includes Subproject No.(s) N/A

Project Director(s) W. J. Kammerer GTRC / ~~GTX~~

Sponsor Burroughs Corporation

Title Investigation of a Network of Advanced Microcomputers into Research & Instructional Programs of the School of Mathematics.

Effective Completion Date: 4/30/85 (Performance) _____ (Reports)

Grant/Contract Closeout Actions Remaining:

- None
- Final Invoice or Final Fiscal Report
- Closing Documents
- Final Report of Inventions
- Govt. Property Inventory & Related Certificate
- Classified Material Certificate
- Other _____

Continues Project No. _____ Continued by Project No. _____

COPIES TO:

- Project Director
- Research Administrative Network
- Research Property Management
- Accounting
- Procurement/GTRI Supply Services
- Research Security Services
- Reports Coordinator (OCA)
- Legal Services

- Library
- GTRC
- Research Communications (2)
- Project File
- Other A. Jones
- I. Newton
- R. Embry



GEORGIA TECH 1885-1985

DESIGNING TOMORROW TODAY

Georgia Institute of Technology
School of Mathematics
Atlanta, Georgia 30332
(404) 894-2700

March 20, 1986

G-37-606/Ames
Final Report -
Orig P/D -

Dr. Sidney C. Adkins
University Sponsored Research Program
Burroughs Corporation
One Burroughs Place
Detroit, Michigan 48232

Dear Sid:

We enjoyed Ms. Lacis' visit very much. She asked a number of insightful questions which we fielded. Our demonstrations included several by graduate students and faculty members.

Before discussing our funding needs, I thought it would be useful to review the status of our current Burroughs Project.

- 1. A Simplified Burroughs Graphics Package - this is an easy to use graphics language which is modeled after Turtle Graphics and was designed to plot the numerical output.
 - a. The Pascal Version allows curve plotting on a HP-7470A plotter and the creation of "Pic Files" which can then be processed using the Burroughs Graphics Editor.
 - b. The Interpretive Basic version is a customized Basic version of a. It will not allow the creation of Pic Files but has the desired feature of being interactive.

This part of the project has been completed. We are, however, using a version that has two additional commands that increases the package's versatility.

- 2. A Library of Subroutines for Scientific Computing - this library contains many of the standard computational algorithms used in scientific computing. Included in this list are FORTRAN code for the algorithms:
 - a. Subroutines for Finding Zeros of a Function
 - Bisection Method
 - Secant Method
 - Newton's Method for Scalar Function
 - Newton's Method for a System of Nonlinear Equations

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b. Solving Linear Equations

LU Factorization for

Dense Matrices

Banded Matrices

Cholesky's Method for Symmetric Positive Definite
Banded Matrices

Forward and Backward Substitution Subroutines for the
above

c. Numerical Integration

Romberg Method

Newton Cotes Method based upon five points

Adaptive Routine based upon the Newton Cotes' Formula
with N=5

Gaussian Quadrature for N=2 through 6

d. Interpolation

Polynomial Interpolation

B-spline Evaluation

Spline Interpolation

e. Least Squares Approximation

QR Factorization

Least Squares Spline Approximation for Linear,
Quadratic and Cubic Splines

f. Ordinary Differential Equations

Runge Kutta Method of Order Four

Adams-Bashforth Method

Runge-Kutta-Fehlberg Method

This package along with its documentation should be
completed by the end of the Spring Quarter (mid-June 1986).

3. A FORTRAN Translator - this package translates Burroughs
FORTRAN code into Burroughs Interactive Basic. During this
translation process it is capable of detecting many common
programming errors. It also contains many of the SBGraphics
Commands.

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Work on this project is progressing. Because of the size and complexity of the code, the progress made this last quarter was slow. These problems have been overcome by creating modules and work should be nearly completed by mid-June 1986.

4. A Terminal Emulator - this program allows our Burroughs microcomputers to communicate and transfer files with any computer on the Georgia Tech Network. In short, this program transforms the Burroughs Microcomputers into intelligent workstations that allow us to take advantage of each computer's strong points. For example, this program allows our faculty to use the Burroughs for editing files, running computational programs and graphing the results, using Multiplan to record their grades and yet reach out to use Georgia Tech's on-line library catalog, to communicate with colleagues at other universities through BitNet, to access the Registrar's files, etc.

This program has been in use for the last 2 years. It is upgraded whenever the Network's parameters are changed.

5. The Burroughs Computing Laboratory - The syllabus of a number of our mathematics courses have been updated to take advantage of our Burroughs Computing Laboratory. This lab is open and staffed with a student instructor seven hours a day. In addition, concise instructional material has been written to illustrate many of the useful features on the microcomputers.

To aid in the continuation of this work I believe the following funding is necessary (unofficial).

	<u>BURROUGHS CORPORATION</u>	<u>GEORGIA TECH</u>
Maintenance	\$10,000	\$10,000
Student Assistant (For Programming)	10,000	
Laboratory Assistance	-	8,000
Dr. Kammerer (2 months)	-	12,000
Travel (Dr. Kammerer)	<u>1,000</u>	<u>-</u>
	\$21,000	\$30,000
Overhead (69%)	<u>14,490</u>	<u>20,700</u>
TOTAL	\$35,490	\$50,700

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If you agree with this assessment, I will have an official contract processed and sent to you.

Thank you for your consideration.

Sincerely yours,

W. F. Ames
Director and Regents' Professor

WFA:sa

cc: Dr. L. A. Karlovitz
Dr. W. J. Kammerer