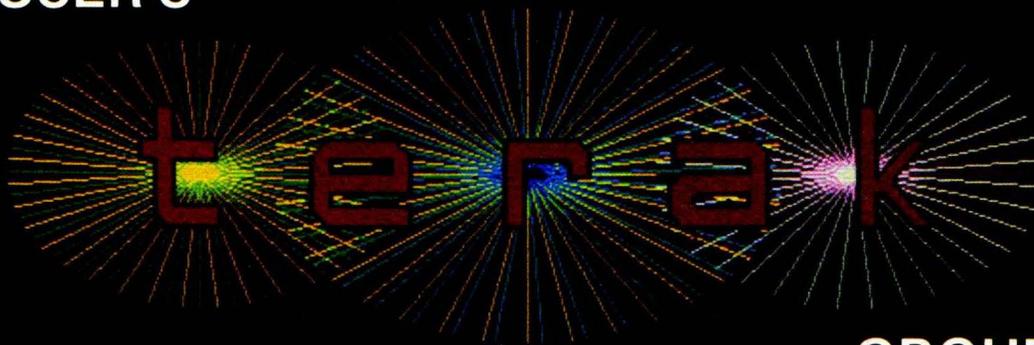


**USER'S**



**MC**

**GROUP**

# NEWSLETTER

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Editor - Jerry Grady

Associate Editor - Marie Corbin

Writers - Marie Corbin, Dave Delster, Jerry Grady

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## From the Editors

The response has been amazing! In one month more than 150 membership applications have been received; more than 100 disks from the library have been sent out. There actually are Terak users out there!

A warm "thank you" must be extended to all those persons who have filled out membership applications. It shows that there is a need and support for a User's Group of this kind. Now if only those persons who have been waiting for the right moment will go ahead and fill out and send in the membership application, the membership rolls would probably double in a month again.

Please take a couple of minutes to fill out the application and mail it. It is the only method used to generate a final mailing list for the Newsletter and Bulletin. If an application is not on file, no copies will be sent. You are not automatically on the mailing list just because you received a copy of the first issue.

And if your copies of the first Newsletter and Bulletin have disappeared, write and ask for more. Extra membership forms will gladly be sent along as well. More than one person at a Terak installation site may join - there is no limit to the number of people that may join. Actually, the more the merrier.

To those diehards who have joined, welcome. And lets make this group into a tool that best serves everybody's interests. And from the Editor - Thank You. You have shown that this idea, at least, isn't just a flash on the screen.

As a final note, we would like to take

this opportunity to congratulate and thank the Terak Engineering Group. This group of people has worked very diligently to get several new Terak products into production but get very little public recognition for all their hard work. So at this time we want to say: "Stand up and take a bow. And THANKS!" (See the product plugs in "And Now a Word From Our Sponsors".)

## About Software Requests

There have been over 50 Software Requests ordering software from the User's Group Library. This is great, as it shows that the software in the Library can be useful to people. But in the process of filling these orders several points have come to light:

PLEASE, please do not send just purchase orders. The User's Group is independent of the Terak Corporation and has no way of processing PO's. Please make the request that a check be processed and included with the purchase order. All purchasing offices will do this, especially for the small amounts of money necessary to order Library software.

Please make sure that all orders are sent to the Terak User's Group address. Currently this coincides with the Terak Corporation address. This can be confusing for Purchasing Offices. They have a tendency to include your Software Requests with general purchases which are sent to the Terak Corporation. The checks are then sent directly to the bank and the software order forms are never seen again. This can cause an unreasonable delay as the orders are chased down.

Do make sure the check is made out to the Terak User's Group and not

the Terak Corporation. The bank gets a bit suspicious when the checks are deposited. Long hours are spent pleading with the teller to accept the checks and not to worry (they probably still do).

Do include a return shipping address with the order form. One order is sitting waiting to be processed because the check has no address on it and the order form is equally blank in that area.

All orders are being shipped via UPS. If this causes a hardship (i.e. the closest UPS office is 70 miles away), please indicate next to the shipping address that the order is to be shipped via US Mail.

### **Our Computer Speaks Russian**

[Editor's Note: This article was written by Ray Coco of the State University of New York, Albany, Computing Center. It is excerpted here from HOTLINE with permission of the author. Future articles on the use of the Terak Graphic Computer System with foreign languages are planned. Input on specific language implementations on the Terak is solicited.]

On January 6, 1978, the (SUNY, Albany) Computing Center submitted a proposal to the Higher Educational Instructional Equipment Grants Program for matching funds to purchase desktop microcomputers, believing that with the advent of this new technology the opportunity existed to radically change the way students learn from and about computers. On June 1, 1978 the desktop computer selection committee agreed to purchase a model 8510/a from the Terak Corporation as it clearly met all the requirements of the Request For Quote.

As an active member of the selection committee, Dr. Ernest Scatton of the

Department of Slavic Languages and Literatures was especially intrigued about this desktop system because of the new areas of linguistics related instruction that could be explored via Terak's programmable character set. For some time Dr. Scatton had been searching for a mechanism by which computers could be used to aid in teaching foreign languages (specifically Russian).

Upon learning that one Terak unit would arrive at Albany in the Fall of 1978, Dr. Scatton decided to seek out colleagues at other academic institutions that were already using Terak systems and developing software for them. In the early winter of 1978-79, Dr. Scatton visited the University of Minnesota where a group headed by Dr. Peter Patton was developing Terak software for a variety of academic disciplines, including the language area. Dr. Scatton returned to Albany confident that software could be designed and implemented on the Terak 8510/a to assist in the teaching of foreign languages and related alternate character set problems, and began this work almost immediately. Although he insists that he is not a "computer programmer" or "technician", Dr. Scatton and his assistants have over the past year and a half produced a great deal of applications software to assist in the classroom - particularly with respect to teaching Russian.

### Utilities Support

In order to facilitate the proposed departmental projects, a considerable amount of time was devoted to the design and implementation of various utility programs and to the modification of existing systems software. Much of that work was related to Terak's ability to handle user-designed character sets (making it possible to use Russian Cyrillic and English alphabets simultaneously) and its graphics capabilities. With the help of these

utilities, instructional programs were written to assist in courses in languages and linguistics, both at the undergraduate and graduate levels.

### Instructional Programs

Two major instructional programs were completed. The "Articulatory Tract" included a series of four tutorials which were produced making use of a graphics display on the Terak of the human vocal tract to teach and finally test the commonly used nomenclature for the organs and spaces used in human speech.

Russian phonetics was the second major instructional effort. A program was designed to simulate Russian phonetic transcription and to teach the linguistic rules which it involves. The program accepts a Russian word in standard Cyrillic orthography and illustrates the generation of its related phonetic transcription by the step-by-step application of major phonetic rules. The program makes considerable use of graphics to provide the user with screen displays explaining actions taken by the program. These displays replicate handouts provided to the student.

### Research

Research in Russian literary bibliographies concentrated on the design and implementation of a system to facilitate creation of bibliographic data files containing both Latin and Cyrillic material. Taking advantage of the Terak's character handling ability, a character set containing both full upper and lower case English and Russian alphabets was built. The original aim of the project was to make it possible to "compute" in Russian as well as English. As a practical application, it is presently being used to build computer-based literary bibliographies made available in machine readable form or as camera-ready copy. Using this

system, a complete bibliography of the important Russian literary journal, Vestnik Literaturny, has been entered.

### Typesetting

With the acquisition of a Cyrillic font for the Computing Center's Compugraphic typesetter, the Slavic Languages Department uses the Terak to input and prepare Cyrillic material for typesetting. Both the Cyrillic and Roman alphabets can be viewed simultaneously on the screen. This makes transliteration schemes unnecessary. The software was recently used to input, edit, and typeset two mixed Russian-English texts. The first was a certificate of participation awarded to high school students who took part in a Russian language competition sponsored by the Slavic Languages Department; the second was a Russian text with accompanying notes and glossary, suitable for inclusion in a Russian reader or for use in an advanced course in reading and translating Russian. The hope is to be able to obtain high-quality camera-ready copy of Cyrillic material at a cost that would be attractive to potential publishers.

It should be noted that although Dr. Scatton's work is aimed primarily at teaching linguistics, and even more specifically Russian, the capabilities he and his assistants found so useful in the Terak can be adapted and used equally well for practically any academic discipline. This is reinforced by Dr. Scatton's own words:

"In a single stroke, acquisition of the Terak system has made possible an almost unlimited range of projects which we could only have dreamed of earlier. There are also unanticipated benefits which the Terak has brought. It has served students well by allowing them to gain experience which will be professionally valuable, by opening up to them the exciting perspectives which computing brings

to the humanities. Beyond this, reference to the computing activities undertaken has found its way into our recruiting materials, and has attracted reactions from colleagues in addition to leading to increasing graduate applications."

During the coming year Dr. Scatton's work will continue along several lines including (1) the inputting of additional texts for advanced Russian courses; (2) designing more instructional modules in Russian; (3) pursuing the feasibility of a cooperative project aimed at producing computer-based review modules in Russian grammar (preliminary discussions have taken place with colleagues at MIT and the University of Chicago); and (4) continuing to input other literary bibliographies.

### **First Terak User's Group Meeting**

by Marie Corbin

On Wednesday, August 5, 1981 at ACM SIGGRAPH '81 in Dallas, Texas, a not so august body of people met for the First and Only Original Terak User's Group Organizational Meeting. It was on short notice, but there was a good turnout of approximately 50 people. Here is a brief summary of that meeting:

#### Discussion of Plan and Intent

With great intentions but little planning, it has been decided that control of the Terak User's Group will remain in Scottsdale for the first year. There will be no election of officers. Jerry Grady, Supervisor, Marketing Software Support, will preside as the User's Group manager for this first year. Terak Corporation has agreed to provide funding for this period of time for the User's Group operations.

Some of the goals for the first year are to obtain an official and legal declaration as a non-profit organization; continue to expand the User's Group Software Library; publish another updated Terak User's Group Bulletin of Available Software (TUGBOATS); publish the newsletter bi-monthly; and write a charter.

Formation of Special Interest Groups is desired. The following groups were suggested: Computer Aided Instruction, Computer Aided Design, Physics and Physics Education, Psychology and Psychology Education, Foreign Languages, and Word Processing.

For the first year, membership dues will not be assessed. Members of the User's Group should consider how they wish to support the organization, beginning with the second year.

Tentative plans for the second year include electing presiding officers, establishing funding, and determining a more concrete direction for the Terak User's Group.

#### Participation of Attendees

The attendees introduced themselves and stated their interest in the Terak User's Group. This allowed an opportunity for everyone to obtain information from one another and determine common interests. Additional newsletters, software catalogs, and membership forms were made available and all of the User's Group Software was available for copying. This was done for several hours after adjournment of the meeting.

For those who were not able to attend, we hope you can make it to one of the proposed three meetings to be held this year (until July, 1982). There will be much more advance notice and planning for these meetings and possible seminar presentations to make them more

interesting.

SEE YOU THERE!

The Terak Pascal Physics Educators User's Group

**Letters to the Editor**

Special Interest Groups

Editor:

Please find enclosed an application for membership in the Terak User's Group.

I would also like to suggest the following special interest groups that could be formed within the User Group:

Graphics Packages  
 FORTRAN  
 PASCAL  
 MACRO  
 RT-11 OS  
 PASCAL OS  
 Text Processing

I do not believe that any of these subject areas were brought up at the [Terak User's Group] meeting last Wednesday [August 5, 1981]. Please feel free to contact me if you have any questions regarding this matter.

Robert R. Schneider  
 Center for Energy Studies  
 The University of Texas at Austin  
 Austin, Texas 78712

Editor:

Enclosed is a letter which is being sent to the individuals who have expressed an interest in participating in the Terak Pascal Physics Educators User's Group. Also enclosed is a form to advertise our Special Interest Group in your Newsletter.

I hope to submit to you a description of some of our programs to be included in your Tugboats section and a general statement of our philosophy, goals and methods. There may be a delay in delivering this material because of summer vacation plans of some of the individuals involved.

I hope that we can coordinate our activities in a manner which will assist the usefulness of the Terak User's Group.

David M. Winch  
 Associate Professor of Physics  
 Kalamazoo College  
 Kalamazoo, Michigan 49007

[Editor's Note: The following pages are copies of some of the material sent by Mr. Winch. If you have a further interest in Physics and/or Physics Education on the Terak contact Mr. Winch or send him a completed copy of the Physics Network information form.]

## TERAK, PASCAL EDUCATIONAL PHYSICS NETWORK

We believe that a network of TERAK PASCAL users would be very helpful in:

- (1) Avoiding duplication of effort. With some planning we can share software and avoid duplicating the work of others.
- (2) Offer specialized services. For example we here at UN-L have a digitizer and have used an artist to draw pictures to enrich our graphics. We could provide such a network service, perhaps. Others might have other special capabilities.
- (3) Co-author physics lessons. We could define a sequence of physics lecture or lab content and share in the development of the lessons. For example, Bob Fuller and Dave Winch are now involved in a project to develop 24 labs to go along with the main 24 modules of our calculus-based physics keller plan courses at Lincoln and Kalamazoo. We are working together to prepare the lesson materials and coordinate the labs.
- (4) Share existing programs. It is possible that each of us has already developed some programs that would be useful to others.
- (5) Information exchange. Cliff Bettis, here, has developed a scheme that allows one to chain pascal programs together and thus keep the student from seeing the command line between different subprograms of a long pascal program. You may have developed some utility programs that will be useful to the rest of us.

We have adopted an authoring flow chart and project organizational structure similar to those used by Alfred Bork's group (Univ. of Cal./Irvine). We have tried to develop a top down structure for all of our lessons and utilities.

Your comments and suggestions are invited.

TERAK, PASCAL EDUCATIONAL PHYSICS NETWORK

NAME \_\_\_\_\_ Single Drive \_\_\_\_\_  
 ADDRESS \_\_\_\_\_ Dual Drive \_\_\_\_\_  
 TELEPHONE NUMBER \_\_\_\_\_ Version of Pascal \_\_\_\_\_  
 Number of TERAKS \_\_\_\_\_ Single Density \_\_\_\_\_ Double Density \_\_\_\_\_  
 Other equipment (printer, color monitor, digitizer) \_\_\_\_\_

Materials that you would share or materials that you would like to obtain \_\_\_\_\_

Other Comments \_\_\_\_\_

Please return to:

David Winch  
 Physics Department  
 Kalamazoo College  
 Kalamazoo, Michigan 49007

Chaining Programs under UCSD Pascal

Editor:

I wrote a short note about my chaining program for the Terak User's Group and have enclosed it. I thought it might be of interest to other users and want to do what I can to support an active users group.

Clifford Bettis  
Department of Physics and Astronomy  
The University of Nebraska-Lincoln  
Lincoln, Nebraska 68588-0111

```
{           A Program Chainer for UCSD Pascal
```

```
           Clifford Bettis
           Department of Physics and Astronomy
           260 Behlen Lab
           Lincoln, Nebraska 68588-0111
```

```
At the University of Nebraska-Lincoln we are interested in writing software
for computer assisted instruction in laboratory physics. We use UCSD Pascal
(both version 1.5 and 2.0) on dual density Teraks. Because computer assisted
instruction programs tend to be long we have found that in spite of our best
efforts at memory conservation we run into trouble both at compile time (lack
of sufficient symbol table space) and run time. Furthermore, for our project
(which will involve undergraduates who have little or no computer experience)
we feel it is necessary to keep separate our ultimate users and the UCSD
operating system. So I wrote the routine listed below to allow the chaining
of programs in the UCSD environment. It has been tested on both the single
and dual density machines, and has proven non-carcinogenic as far as the
operating system is concerned. To use it, compile it, write a calling program
(an example, CHAIN_TEST is given below) and compile it and link it to the
compiled unit. One can also install the CHAINER in the library using the
utility LIBRARY.
```

```
}
```

```

{$S+}
UNIT CHAINER;
  INTERFACE
    PROCEDURE CHAIN(S: STRING);
```

```
  IMPLEMENTATION
```

```
CONST POINT_ADDR = 48 {60 octal}; OFFSET = 84 {124 octal, there are the
  values for UCSD Pascal version 2.0; for version 1.5e
  use OFFSET = 82 (122 octal) };
```

```

        RETURN = 13;

PROCEDURE CHAIN;

TYPE
    BUFFER = PACKED RECORD
        QUEUE : PACKED ARRAY [0..63] OF CHAR;
        HEADER: INTEGER;
        TAILER: INTEGER;
        CHAR_COUNT: INTEGER;
    END;

VAR
    KBD_SERV_ADDR : INTEGER;
    RING_BUFF_ADDR: INTEGER;
    I : INTEGER;
    RNG_BUFFER : RECORD CASE BOOLEAN OF
        TRUE : (ADDR: INTEGER);
        FALSE: (BUF: ^BUFFER);
    END;

PROCEDURE GET_ADDRESS(VAR KBD_SERV_ADDR: INTEGER);

TYPE PTR_TO_ADDR = INTEGER;

VAR SERV_LOCATION: RECORD CASE BOOLEAN OF
    TRUE : (LOCATION: INTEGER);
    FALSE: (REG: ^PTR_TO_ADDR);
END;

BEGIN
    SERV_LOCATION.LOCATON := POINT_ADDR;      { Get address of keyboard
                                                interrupt service routine }
    KBD_SERV_ADDR := SERV_LOCATION.REG^;
END;

PROCEDURE GET_BUFF(RING_BUFF_ADDR: INTEGER);

BEGIN
    RNG_BUFFER.ADDR := RING_BUFF_ADDR;      { Point to ring buffer }
END;

BEGIN (* CHAIN *)
    GET_ADDRESS(KBD_SERV_ADDR);             { Point to keyboard service
                                                routine }
    RING_BUFF_ADDR := KBD_SERV_ADDR - OFFSET; { The keyboard input buffer is
                                                OFFSET bytes from routine }
    GET_BUFF(RING_BUFF_ADDR);              { Put this address into an
                                                address pointer }
    WITH RNG_BUFFER.BUFF^ DO
        BEGIN
            FOR I := 2 TO (LENGTH(S)+1) DO
                QUEUE[((HEADER+I) MOD 64)] := S[I-1]; { Insert program name into

```

```

                                the keyboard buffer }
QUEUE[((HEADER+1) MOD 64)] := 'X';    { Preceed with X for eXecute }
QUEUE[((HEADER+LENGTH(S)+2) MOD 64)] := CHR(RETURN);
                                { And append carriage return }
HEADER := (HEADER + 1) MOD 64;      { Update queue head and tail }
TAILER := (HEADER + LENGTH(S) + 2) MOD 64;
END;
END;
END.
```

{ An example that uses the CHAINER }

```

{$S+}
PROGRAM CHAIN_TEST;
USES CHAINER;
VAR S: STRING;

BEGIN
  WRITELN('What program do you wish to execute?');
  WRITE(': ');
  READLN(S);
  CHAIN(S);
END.
```

{ Note that after the CHAIN procedure is called there should be no READS or READLNs in the calling program as these procedures reset the ring buffer used in the CHAINER. }

Editor's Note: In the UNIT CHAINER, Mr. Bettis uses a technique that is known to most UCSD Pascal hackers to access memory. This is the RECORD CASE structure as used in procedure CHAIN. This structure allows a user to PEEK and POKE memory contents easily. Basically, a record type is set up that is a variable case structure as in RNG\_BUFFER. Part of the case is an integer: this is where the address of the memory location to be accessed is stored. The other part is a pointer to a TYPE that represents the data in memory to be accessed, in this case a RECORD structure that is a QUEUE. The address of the interrupt service routine is retrieved (from the contents of location 48) and then a new address is calculated using the known offset of where the keyboard

input buffer is located. Storing this address in the integer portion of the variable case record structure, the queue can now be accessed by pointing to the contents of that address with RNG\_BUFFER.BUFF<sup>^</sup>.

This technique should be used by only the most serious of hackers that are quite familiar with the memory layout of the Terak/UCSD Pascal OS.]

**Question****And Answer -****Installing a Line Printer**

The following is a typical list of the most often asked questions by someone trying to attach a printer to a Terak Graphic Computer System. These questions were derived from frequent telephone conversations with many users. If your particular question is not answered please send a letter to the Newsletter. It will be answered in the next issue. If you have any helpful hints to add to this list, please send those as well.

Q: I want to add a printer to my Terak. What is the best type to use?

A: Choosing a printer is a very personal thing. All of your printer requirements must be considered: Do you want a letter quality printer (fully formed character); Do you want high speed output; Do you want graphics output capability; Do you want different character fonts; What is your price range?

Write down all your printing requirements and then call one or more local computer peripheral dealers. They can provide you with a list of printers, literature, specifications, and price ranges that will fit most if not all of your needs. Choose a reliable dealer and don't forget printer ribbons, paper, an RS-232 cable, and other accessories. A list of printers that are known to work with

Terak Graphic Computer Systems is given in section 5 of TUGBOATS.

Q: What is necessary to connect the printer to the Terak?

A: Basically all you need is an available serial port and an RS-232 cable. But there are a few more requirements. First your printer should have RS-232 serial communication capability. Next the RS-232 cable from the printer must connect to the J1 connector (DCE) of the serial port EIB. Refer to the Terak 8510/a Installation and User's Guide for correct orientation. The RS-232 cable is probably assembled, but for reference, pins 2, 3, 7 and 20 should be connected for use by the Terak. Pins 2 and 3 are Transmit Data and Receive Data, pin 7 is Signal Ground, and pin 20 is Data Terminal Ready (DTR).

Q: What are the functions of these pins?

A: Pin 2 or Transmit Data is the wire that carries the characters from the Terak to the printer or peripheral device.

Pin 3 or Receive Data accepts characters from the printer or peripheral device.

Pin 7 or Signal Ground will help to relieve spurious noise on the other signal wires.

Pin 20 or Data Terminal Ready (DTR) is used by the printer to tell the Terak when it is all right to send another character. In some printers this signal will indicate when the printer's character buffer is full by taking the signal HIGH.

Q: What is a printer character buffer and when does it get full?

A: Almost all new printers have a character buffer. This is a section of memory, usually 100 to 1000 bytes long, that will store unprinted characters. The reason for this is that the computer usually sends information faster than it can be printed. This buffer allows the computer to send blocks of character without waiting for the printer to

print each individual character. The DTR signal indicates that the printer is ready to accept another character. Several printers use this signal to indicate that the buffer is full by changing the signal from active LOW to HIGH. Other printers may use a different method of indicating the buffer is full.

Q: What might those methods be?

A: It will be necessary to check the printer's user or operator manual to find out, but one of the most common methods requires the printer to send a character, such as XON (control S), when the buffer is full and then send a character, such as XOFF (control Q), when it is ready to receive more information. Another method requires the Terak to send a character, such as ETX, and then wait for the printer to send back a corresponding ready character, such as ACK, before the Terak sends any more information.

Q: How does the Terak know which method to use?

A: Guided by the printer's manual, you must choose the correct driving software. This software is available through the User's Group Library. For the RT-11/85 operating system, order disk RT3B-80-0005; for UCSD Pascal, order disk PS20-80-0001.

Q: What is on these disks?

A: RT3B-80-0005 contains the source and system files for several printer handlers. If your printer uses DTR to indicate buffer full, use LPUNT1.MAC and install the file SL.SYS as the printer handler. If your printer uses the XON/XOFF protocol, use LPXON.MAC and SX.SYS. LPETX.MAC and SE.SYS are the corresponding source and handler files for printing using the ETX/ACK protocol.

PS20-80-0001 contains a program called PRINTOUT. This program presents a screen menu with several options. By typing A, then hitting

the space bar, a printer name or protocol will appear. When the correct information is displayed, select your next option by typing its letter. When you quit PRINTOUT, save the status of the program to keep those options you have selected for the next time you execute PRINTOUT.

Q: What about all the switch settings that are referred to in Appendix F of the Terak 8510/a Installation and User's Guide?

A: On page F-1 is a diagram of the serial port EIB (External Interface Board) which is mounted on the rear of the 8510. There are two groups of pencil switches which must be set properly to communicate with the printer. Switches should be set using a paper clip. This ensures that the switch is pressed cleanly and firmly. When setting a switch, it should click audibly into place. Pushing in at the top of the switch will turn it ON (red will show at the bottom). Pushing in at the bottom of the switch will turn it OFF (red will show at the top).

Starting from the left, use the following switch settings:

Left 1-ON 2-OFF 3-ON 4-OFF

This selects the serial port for Serial Unit 1, which is what the User's Group software is preset to communicate with.

Left 5-OFF 6-OFF 7-OFF 8-OFF

This turns off the serial port sense switches. They perform no purpose as far as the printer is concerned.

Right 1-OFF 2-OFF 3-OFF 4-OFF

This sets the communication mode to be 8 bit characters, parity disabled, TTY filter disabled, and odd parity. In almost all instances these settings will work with the printer selected. If you are using a teletype model 33, then you may want to enable the TTY filter.

The next set of four switches sets the baud rate for the printer. The following baud rates are the most common:

Charles Edward Judge  
University of Nebraska-Lincoln  
Physics Department  
Attn: Robert Katz  
Behlen Laboratory, Room 365  
Lincoln NB 68588

Phone: 402/472-2405

Graphics  
Word Processing  
Numerical Methods

Dr. Marian Harty  
Edgewood College  
855 Woodrow Street  
Madison WI 53711

Phone: 608/257-4861

Educational uses of computers (college-level);  
Statistical Packages;  
Innovative Programs

Jerome P. Wood  
6105 Harris  
Raytown MO 64133

Phone: 816/474-8520

Personal Finance/ Recordkeeping  
Pascal language and general Utilities  
Graphics

Dennis P. Ortbals  
DARCOM-ALMSA  
PO Box 1578  
DRXAL-TA  
St. Louis MO 63188

Phone: 314/263-5646

Business Software  
Word Processing  
Data Communications  
Graphics

Henry T. Sigiura, M.D.  
Presbyterian-University of PA Medical Center  
Department of Pathology  
51 North 39th Street  
Philadelphia PA 19104

Phone: 215/662-8077

Dr. David E. Hartman  
Chairman  
Engineering Division  
2100 South Mobberly  
Longview TX 75602

Phone: 214/753-0231

Engineering education, applications  
Electrical, mechanical, structural engineering

Dr. Leo J. LaFrance  
New Mexico State University  
Mechanical Engineering Department  
Box 3450 JH 159  
Las Cruces NM 88003

Phone: 505/646-3501

Computer Aided Design and other Applications of  
computer graphics

Dr. Wesley C. Becker  
University of Oregon  
College of Education - DCEP  
Eugene OR 97403

Phone: 503/686-5501

CAI - Language functions

Peter A. Stewart  
Brown University  
Division of Biology and Medicine  
Box G  
Providence RI 02912

Phone: / -

Modelling of physiological systems  
Graphics  
Numerical analysis, word processing, Information  
storage and retrieval and processing

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Union College  
Department of Chemistry  
1033 Springfield Avenue  
Cranford NJ 07016

Phone: 201/276-2600

Software for use with Chemistry students  
Software for use in an analytical lab  
Interfacing micro with instruments

Sidney Birnbaum  
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Mathematics Department  
3801 Temple Avenue  
Pomona CA 91768

Phone: 714/598-4843

Instructional applications  
Numerical analysis

Edward N. Stevensen, Jr.  
University of Hartford  
College of Engineering  
200 Bloomfield Avenue  
West Hartford CT 06117

Phone: 203/243-4846

Vibration, motion graphics-design optimization

Lqwrnce A. Wheeler, MD, PhD  
 Indiana University  
 N440 University Hospital  
 1100 West Michigan Street  
 Indianapolis IN 46202

Phone: 317/264-3771

Computer Aided Instruction  
 Differential Diagnosis  
 Pathology Computing

Gary P. Dirlam, P.E.  
 Minnesota Department of Transportation  
 John Ireland Blvd  
 Transportation Bldg, Room 312  
 St. Paul MN 55155

Phone: 612/296-3073

Project Management/Scheduling  
 Communication with IBM host; graphic representaton  
 of data; support programming operations  
 Statistical analysis

Le H. Nguyen  
 University of Florida  
 CIRCA  
 411 Weil Hall  
 Gainesville FL 32611

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Computer Graphics  
 Computer Assisted Instruction  
 Word Processing

Betty Ruth Neilly  
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 Academic Computer Services  
 Miami FL 33199

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Education

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Phone: 612/690-6598

Physics applications

Dr. Frank P. Day  
 Old Dominion University  
 Department of Biological Sciences - NLSB  
 Norfolk VA 23508

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Data Management and Analysis (ecology).  
 Data Acquisition from Autoanalyzer and other  
 instruments

Kerry B. Clark  
 Florida Institute of Technology  
 Department of Biological Sciences  
 Melbourne FL 32901

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CAI, data goosing

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 West Virginia University  
 Department of Physical Science  
 306 Hodges Hall  
 Morgantown WV 26506

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General Physical Science related software (as is  
 being developed at Irvine, CA)  
 General and advance Physics Instructional software  
 Astronomy  
 Meteorology

Arthur E. Rogosta  
 Aeromechanics Laboratory, USARTL  
 Trailer 18  
 Ames Research Center  
 Moffett Field CA 94035

Phone: 415/965-6235

Operating System Extensions  
 Software Development Tools  
 Games

Roger Schvaneveldt  
 New Mexico State University  
 Psychology Department  
 Box 3452  
 Las Cruces NM 88003

Phone: 505/646-1047

John H. Jinkerson  
 NASA-Ames Research Center  
 FHI  
 Moffett Field CA 94035

Phone: 415/965-5108

Computer Graphics  
 Scientific Subroutine Libraries  
 Control Theory

Robert Hsu  
 University of Hawaii  
 Linguistics Department  
 Honolulu HI 96822

Phone: 808/948-8602

Non-standard character sets, management of  
 word processing software

will help prevent damaged read/write heads, erratic diskette errors, and lost data.

Take care of your hardware and it will take care of you.

To order the FD-08 cleaning diskette, contact:

Innovative Computer Products  
18360 Oxnard Street  
Tarzana, CA 91356  
Phone: (213) 996-4911

Order: Innovative Computer Products  
FD-08  
Diskette Drive Head Cleaning Kit  
Part Number: 2024

### And Now a Word From Our Sponsors

#### Terak Introduces New Products

At SIGGRAPH '81 in August Terak introduced and has now begun shipment of the latest new Terak products.

The DEC LSI-11/23 processor is now available as an option on Terak Graphic Computer Systems. The 8510/23 Black and White Graphic Computer System and the 8600/23 Color Graphic Computer System using the DEC LSI-11/23 microcomputer processor come standard with 128K bytes of memory. The LSI-11/23 can optionally support up to 256K bytes of memory. The 8510/23 and 8600/23 systems come standard with a Memory Management Unit (MMU) and the Floating Point Processor (FPP). The 8510/23 and 8600/23 are supported under RT-11/85 Version 4.0C and Terak/UCSD Pascal Version 2.0.

Terak has introduced a Winchester technology, 8-inch, hard disk drive, model 8518. The 8518 provides mass storage capacities of 10, 20, and 40 Megabytes. The 8518 is fully supported under RT-11/85 Version 4.0C and

#### Terak/UCSD Pascal Version 2.0.

A high resolution, 19-inch, color monitor is now available for the Terak 8600 Color Graphics Computer System. The 19-inch monitor is being offered as an added-cost alternate to the standard 8600 13-inch monitor. The 19-inch monitor features a single in-line gun, to eliminate user convergence problems and a high contrast glass filter to limit flicker and user eye fatigue.

Version 4.0C of the RT-11/85 operating system is also available from Terak. This version of the operating system is designed to support all new Terak products while providing the user with interactive, real time programming capability.

Terak FORTRAN IV/RT-11 Version 2.5 is the latest DEC compatible FORTRAN IV based on ANSI FORTRAN X3.9-1966. Version 2.5 includes a library of FORTRAN-callable graphics subroutines which conform to SIGGRAPH 2D, level 1 standards. FORTRAN IV Version 2.5 operates on the Terak Graphic Computer Systems under RT-11/85 Version 4.0C with a minimum of 512K bytes of on-line storage.

For further technical and pricing information on these new products, please contact your Terak District Manager or the Terak Marketing Department in Scottsdale, Arizona at (602) 998-4800.

#### MINITAB Is Statistically Proven on Teraks

At last a statistics package is available for the Terak - and a very excellent one it is! MINITAB is a complete statistical analysis system with facilities ranging from simple cross-tabs, tables, and plotting through regression and chi-square analysis. Fully interactive and very easy to use, it's a vast improvement over the batch statistics packages that required weeks

to learn to use the 'control cards'. In addition, it includes new statistical techniques such as Paul Velleman's Exploratory Data Analysis package.

Better yet, this package runs on more than Teraks. You can use it on any LSI-11 or PDP-11 which has an RT-11 operating system. It is not yet available under UCSD Pascal, but the authors of MINITAB have just acquired a Terak and are planning to put it up under UCSD Pascal in the future. In the meantime, they are working on ways to alleviate the problem of having the size of the data arrays bounded by the size of a machine's memory. On the Terak and other small computers, it is not possible at present to manipulate large amounts of data using MINITAB. However, for small amounts of data it is a superb analysis tool. It may be particularly suitable for class use, in conjunction with a MINITAB text book.

If you would like more information on how to obtain a copy of MINITAB, write: MINTAB Project, 215 Pond Laboratory, University Park, PA 16802, or phone (814) 865-1595.

[Reprinted with permission from "nibbles", DACS, Cornell University]

#### Data Base Management becomes International

International Computing Company (ICC) has announced several recent acquisitions and agreements to develop, market, and support applications and systems software for users of the RT-11 operating system on DEC PDP-11 and LSI-11 computers.

ICC has acquired rights to the popular RTFILE relational data base management system from Interproject, Inc. Robert Natale, Product Manager for ICC, reports that "on-going documentation, development, and support will be the principal marketing factors for RTFILE. Current and prospective users can count on a long-term relationship with us."

Scheduled major enhancements to RTFILE include interactive telecommunications utilities, business graphics, and upgraded distributed data base processing.

ICC has also agreed to be the North American representative of HAMMOND Software of West Germany. HAMMOND Software offers a wide range of software for RT-11 users, most notably the STAR-eleven local area networking system. STAR-eleven links up to fifteen PDP-11 and/or LSI-11 computers in a highly responsive and efficient network with shared and local peripheral devices, increased user job space, improved throughput via I/O and directory caches, performance monitoring, and concurrency control for distributed data base processing under RTFILE with parallel general purpose computing.

Both RTFILE and STAR-eleven have been successfully installed on Terak Graphic Computer Systems. Watch future issues of the Newsletter for an in-depth article on STAR-eleven.

Further information is available from: Robert C. Natale, Product Manager, International Computing Company, 4330 East-West Highway, Bethesda, MD 20014, 301-654-9120.

#### CAD Instruction with a Terak from T&W

T & W Systems has announced a keyboard-entry version of the T-SQUARE computer-aided-drafting (CAD) system specifically designed for CAD training. The low cost, introductory software uses the keyboard to move a screen cursor to place text, dimension lines, lines, circles, Bezier curves, arcs, polygons, and rectangles. The resultant figure can be stored on diskette and recalled for editing or combining with other figures to form a composite drawing on the graphics screen. The keyboard-entry version is intended for use in low cost introductory training in CAD and as a

first step leading to the comprehensive T-SQUARE which has digitizer input and plotter output.

For more information on pricing and ordering, contact T & W Systems, Inc., 18437 Mt. Langley, Suite B, Fountain Valley, CA 92708, or call (714) 963-3913.

### Membership Roster Swells

The following is a list of those persons that gave permission to the User's Group to publish their names, addresses and interests in the Newsletter. The roster is not sorted into any order for this printing, but it is hoped to have the information in a data base for easy sorting and retrieving by keys at a near future date.

Jerry Grady  
Terak Corporation  
14151 North 76th Street  
Scottsdale AZ 85260

Phone: 602/998-4800

Text Processing, Text Editors  
Graphics - color and black and white (general)  
Languages

Marie Corbin  
Terak Corporation  
14151 North 76th Street  
Scottsdale AZ 85260

Phone: 602/998-4800

Psychology and psychology education

Vicky Reskie  
Terak Corporation  
14151 North 76th Street  
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Phone: 602/998-4800

Marketing, financial forecasting

Sohail Hussain  
Terak Corporation  
14151 North 76th Street  
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Phone: 602/998-4800

Graphics in general  
Games  
Systems work  
Text Editors

Donald L Kaiser, DrPH  
University of Virginia Medical Center  
Department of Medicine  
Box 494  
Charlottesville VA 22908

Phone: 804/824-5512

Biostatistics, data file handling, remote job editing and entry to IBM 4341, interface to 11/70 systems

Robert M. Stewart  
Iowa State University  
Computer Science Department  
Computer Science Building  
Ames IA 50011

Phone: 515/294-4377

Education

Prof. John A Endler  
University of Utah  
Department of Biology  
Salt Lake City UT 84112

Phone: 801/581-5539

General interest: Population biology, population genetics. Interests relevant to computing: simulation, analysis of pictures, general data analysis

Donald B. Malkoff, M.D.  
UCSD: Navy Research and Development  
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San Diego CA 92126

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Neurology and general medicine  
Physiology

John W. Paul III  
University of San Diego  
Alcal Park  
Academic Computing  
San Diego CA 92110

Phone: 714/293-4567

Graphics  
CAI  
Games

Michael Ellestad  
Medtronic Inc.  
6972 Central Av NE  
MS230  
Minneapolis MN 55432

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Simulation of the interaction between body and implantable medical devices.  
General scientific computing

Steve Blewitt  
Boeing Vertol Company  
Box 16858  
P32-18  
Philadelphia PA 19142

Phone: 215/522-2088

Games, Ada, Data Entry, Statistics, Simulation

C. C. Clawson  
University of Minnesota  
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Minneapolis MN 55455

Phone: 612/376-5448

Al Madson  
916 Area Vo-Tech Institute  
3300 Century Avenue North  
White Bear Lake MN 55110

Phone: 612/770-2351

Teaching the fundamentals of Computer Aided Design  
and Drafting, also used for class attendance and  
progress recording.  
Basic Games

John M. Basgen  
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Department of Pediatrics  
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Data Storage  
Morphometric analysis of biological tissue  
Text editing

Val Watson  
NASA-Ames Research Center  
Mail Stop 202A-1  
Moffett Field CA 94035

Phone: 415/965-6421

Numerical methods for solving scientific problems  
Methods to illustrate physical phenomena

Karl Coke, Jr.  
Exxon Company, U.S.A.  
Exploration Data Processing Center  
P.O. Box 2180  
Houston TX 77001

Phone: 713/965-7339

Data entry and lookup for commercial database  
Data transmission to and from IBM host  
Video display from recorder to CRT

Theodore F. Elbert  
University of West Florida  
Department of Systems Science  
Pensacola FL 32504

Phone: 904/476-9500

Education, Languages  
Engineering (Control systems) Applications  
Business Applications  
Operations Research Applications

Roger W. Elliott  
University of Florida  
Computer and Information Sciences Department  
512 Weil Hall  
Gainesville FL 32611

Phone: 904/392-2371

Information retrieval  
Computer Aided Design  
Computer Science Education

Robert Balaban  
Management Decision Systems  
200 Fifth Avenue  
Waltham MA 02254

Phone: 617/890-1100

Information graphics and decision support systems  
Developing the Terak for use as an intelligent  
terminal for Prime and IBM systems

G. N. Griffiths  
Grand Valley State  
Math/ Computer Science  
444 Mackinac Hall  
Allendale MI 49401

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Sister Anette Berger  
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Phone: 319/556-8151

Peder J. Johnson  
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Department of Psychology  
Albuquerque NM 87131

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Control of experiments, primarily in the area of  
reaction time studie with visual and auditory  
stimuli

Kenneth Johnson  
Grand Valley State Colleges  
Department of Mathematics and Computer Science  
Allendale MI 49401

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Editors and Word Processors  
Ada  
Telecommunications applications

Lyman Elwell  
National Bureau of Standards  
Molecular Spectroscopy  
Bld 221 Room B-268  
Washington DC 20234

Phone: 000/000-0000

Elliot M. Landaw, MD, PhD  
UCLA School of Medicine  
UCLA Department of Biomathematics  
Room AV-617  
Los Angeles CA 90024

Phone: 213/825-6743

Simulation of Dynamical Systems (Differential Eqs  
models) Three-dimensional Phase Portrait Graphics  
Nonlinear Regression and Optimal Design Time  
Series Analysis (frequency domain) Biomathematical  
Modeling, Teaching

Jeff Miller  
University of California - San Diego  
Department of Psychology, C-009  
La Jolla CA 92093  
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Statistical analysis programs  
Word processing

William T. Fletcher  
North Carolina Central University  
Department of Mathematics  
Durham NC 27707

Phone: 919/683-6315

Mathematical software; Computer Assisted Materials  
(Instructional) for use in teaching the calculus,  
linear algebra

Warren Van Camp  
NASA-Ames Research Center (Informatics, Inc.)  
MS 233-15  
Moffett Field CA 94035

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Systems programming  
Utilities  
Text Editing  
Data Networking

Jeffrey Hugo  
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OLAK 4444 OPS/TAE  
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Luke AFB AZ 85345

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Harvey J. Karten, M.D.  
Long Island Research Institute  
Research Foundation for Mental Hygiene  
Health Sciences Center T-10 Room 090  
Stony Brook NY 11794

Phone: 516/246-2064

Neurobiology with particular emphasis upon  
neuroanatomy. Quantitative morphometry, spatial  
geometry of cellular arrays and quantitative  
immunohistochemistry

Jerry Tangren  
Washington State University  
Tree Fruit Research Center  
1100 North Western Avenue  
Wenatchee WA 98801

Phone: 509/663-8181

Statistical computing on microcomputer,  
integrated pest management computer systems,  
and environmental biophysical computer modeling

Michael Green  
NASA-Ames Research Center  
Entry Technology Branch  
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Moffett Field CA 94035

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Numerical algorithms for scientific applications

William G. Johns  
Tektronix, Inc.  
M.S. 92-525  
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Beaverton OR 97077

Phone: 503/629-1961

Takeo Takeuchi  
North Carolina Central University  
Department of Physics  
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Computation in general

Dale Kirmse  
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Gainesville FL 32611

Phone: 904/392-0862

Computer Aided Process Design  
Chemical Engineering  
Computer Aided Instruction

Charles A. Warren, PhD  
University of Illinois Medical Center  
School of Public Health  
PO Box 6998  
Chicago IL 60680

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Real time applications, Perception motor-tracking  
and perceptual research including human informa-  
tion storage; Even-related brain electrical  
activity

Linda Bertotti  
Boeing Computer Services  
Boeing-Vertol Support District  
Scott Plaza II  
Industrial Highway  
Philadelphia PA 19113

Phone: 215/522-7414

Graphics  
Available software  
Statistical packages

Richard Kingsley  
University of Rhode Island - GSO  
Graduate School of Oceanography  
South Ferry Road  
Narragansett RI 02882

Phone: 401/792-6103

Easy to use graphics programs for scientific  
applications  
Word Processing

A.C.M. Oerlemans  
Philips Research Laboratories  
Bldg. WB3  
Eindhoven 5600 MD  
Netherlands  
Personal computers  
Embedded computer systems

Phone: 040/742-0471

M. David Millsap  
Las Cruces High School  
1755 El Paseo Road  
Las Cruces NM 88001

Phone: 505/526-2406

Teaching computer science course including concept of algorithms; Computer assisted learning in chemistry and physics; Illustrate graphically the results of data collected in science labs; Project sequentially the orbital shapes of quantum mech.

Dr. Charles T. Young  
Michigan Technological University  
Department of Geology and Geological Engineering  
Houghton MI 49931

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Geophysics; Signal Analysis; Physics; Electrical Engineering; Teaching; Computer Music

Paul E. Johnson  
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Geographic Data Systems Group  
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Oak Ridge TN 37830

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Graphics

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Chemistry CAI

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CAI Simulations

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University of New Brunswick  
School of Computer Science  
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Teaching  
Performance Evaluation

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Netherlands  
Visual perception and reading  
Experimental control and on-line data analysis  
Word Processing  
Computer Aided Learning

Phone: 310/404-7230

Ron Loser  
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Alamosa CO 81102

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Mathematical applications (graphics, simulations, calculations)  
CAI

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United Kingdom

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Sally Nold  
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Flight Controls, Org. 75620  
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Wichita KS 67210

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Software Configuration Control  
Automated Design and Software Documentation  
Electrical Engineering Aids and Tools  
Software Simulation Aids and Tools

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Visual perception and reading  
Experimental control and on-line data analysis  
Word Processing  
Computer aided learning

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CAI  
Computer Education

Richard Campbell  
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Developmental Biology Center  
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Modeling of biological phenomena

Lorin D. Weber  
Ricks College  
Physics Department  
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Physics lab experiments on Terak 8510/a  
Physics computer assisted instruction modules

Christopher Gunn  
 University of Kansas Center for Research, Inc.  
 University of Kansas Applied Remote Sensing (KARS)  
 Space Technology Center (Nichols Hall)  
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 Lawrence KS 66045

Phone: 913/864-4775

Image processing; image pattern recognition;  
 computer graphics; cartography; geographic data  
 base retrieval; interactive digitization and  
 digital data manipulation; information systems;  
 word processing; natural language applications

Lt. Col Donald Pursley  
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 Education and Research Computer Center  
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 USAF Academy CO 80840

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Finite Element Modeling  
 Basic Graphics  
 Computer Aided Design  
 Computer Aided Instruction

Capt. Gary Giesecke  
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Finite Element Modeling  
 Basic Graphics  
 Computer Aided Design  
 Computer Aided Instruction

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 Basic Graphics  
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 Computer Aided Instruction

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 Basic Graphics  
 Computer Aided Design  
 Computer Aided Instruction

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 Basic Graphics  
 Computer Aided Design  
 Computer Aided Instruction

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Finite Element Modeling  
 Basic Graphics  
 Computer Aided Design  
 Computer Aided Instruction

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 Basic Graphics  
 Computer Aided Design  
 Computer Aided Instruction

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 Basic Graphics  
 Computer Aided Design  
 Computer Aided Instruction

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Finite Element Modeling  
 Basic Graphics  
 Computer Aided Design  
 Computer Aided Instruction

Robert C. Beck  
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 Minneapolis MN 55455  
 Phone: 612/373-9037

David J. Cretsinger  
 Rutgers University  
 Busch Campus  
 CCIS Computer Reference Center  
 P.O. Box 879  
 Piscataway NJ 08854  
 Phone: 201/932-2296  
 Any educational uses of Teraks

Grant W. Mason  
 Brigham Young University  
 Physics and Astronomy  
 290 ESC  
 Provo UT 84602  
 Phone: 801/378-2450  
 Computer Assisted Instruction (Physics)

John N. Quiring, Ph. D.  
 Grand Valley State Colleges  
 College Landing  
 Allendale MI 49401  
 Phone: 616/895-6611

Vittorio Castelli  
 Xerox/ Mesa  
 141 Webber Ave  
 North Tarrytown NY 10591  
 Phone: 914/631-1196  
 Scientific Computation  
 Word Processing  
 Graphic capability

Peter J. Boone  
 Arsycom BV  
 Kabelweg 43  
 Amsterdam 1014 BA  
 Netherlands  
 Phone: 020/823-858  
 The various applications for Terak systems.  
 The software developed for a C.A.D. surrounding.

Dr. Donald G. Morin  
 Rose-Hulman Institute of Technology  
 Department of Mechanical Engineering  
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 Terre Haute IN 47803  
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 Animation; Engineering/ Scientific applications;  
 CAD/CAM

John A. Stewart  
 Washington State University  
 Department of Sociology and Sociological DP Center  
 204 Wilson Hall  
 Pullman WA 99164  
 Phone: 509/335-6860  
 Previous use was for research in social psychology  
 and sociology. Future goals include use as a  
 word processor and small FORTRAN programs for  
 sociological research

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 Suite 409  
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 22046  
 Phone: 703/442-7905

J. Scott Long  
 Washington State University  
 Department of Sociology and Sociological DP Center  
 204 Wilson Hall  
 Pullman WA 99164  
 Phone: 509/335-6860  
 Previous use was for research in social psychology  
 and sociology. Future goals include use as a  
 word processor and small FORTRAN programs for  
 sociological research.

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 Department of Anatomy  
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 4200 E. Ninth Ave  
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 Phone: 303/394-7696

Daniel LaLiberte  
 University of Minnesota, Duluth  
 Chemistry Department  
 Chemistry 136  
 2400 Oakland Avenue  
 Duluth MN 55812  
 Phone: 218/726-7671  
 Data Base Systems - screen oriented  
 Interactive Debugging tools  
 Multi-port communication

A/D Conversion of signals generated in single  
 neurons (intracellular recordings); digitizing  
 photomicrographs and electronmicrographs of  
 nervous tissue; data files management, including  
 reprint file management

	Sw 5	Sw 6	Sw 7	Sw 8
300 Baud	OFF	OFF	OFF	ON
1200 Baud	ON	OFF	OFF	OFF
9600 Baud	ON	OFF	ON	ON

The importance of using a paper clip to set these switches cannot be stressed too much. A ball point pen does not make it!

Q: How do I test my printer?

A: Assuming you have followed the Terak installation procedures to check out the serial line unit, and the printer manufacturer's installation procedures, there should be no problem connecting the printer. Set the serial unit switches as indicated above, plug the RS-232 cable into the J1 connector, and power up the Terak and the printer. Under RT-11/85, copy the handler you have previously chosen onto your system disk. For example:

```
COPY/SYS DK1:SL.SYS DK0:<ret>
```

Then install the handler and assign it as logical device LP. For example:

```
INSTALL SL<ret>
```

```
ASSIGN SL LP<ret>
```

LP is the name that all system utilities will output to if they use the printer. Then just type DIR/PRI<ret>. This will print the directory of the disk.

Under UCSD Pascal, eX(ecute #5:PRINTOUT. Type A to choose the printer option, then type the space bar until the correct printer type appears. Type B to enter a file name and type #5:HELPPFILE<ret>. Then type P.

If everything has been set up properly, you should get output on your printer. Possible troubleshooting might include check AC power, check switch settings on the printer and the Terak, and be sure the RS-232 cable is plugged securely into the J1 connector.

Q: I am getting output but it is incomprehensible gibberish. What's wrong?

A: The baud rate between the serial port on the Terak and the printer is

not set properly. Check the switch settings on the serial port EIB and the printer baud rate setting. Correct where necessary.

Q: I am getting output, but after a couple lines, the printer will lose characters, then start printing again, only to lose more in a couple lines.

A: The communication protocol between the software and the printer was not chosen properly. Check the printer manual again and reselect your printer driver as outlined above.

Q: I already have something connected to my serial unit 1. How do I set the printer up on a different unit number?

A: To have more than one device connected to the Terak requires more than one serial unit. Just because there are 3 connectors on one EIB does not mean you can connect up 3 devices. Each connector serves a different purpose in relation to that 1 serial unit.

A second serial unit must be purchased and installed. The only switch setting change from those listed above would be to set the first 4 switches on the left set as follows:

Left      1-ON    2-OFF    3-OFF    4-OFF

This selects the serial port as serial unit 2. The hardware change is easy. The software is a bit more involved. The source files for the printer drivers must be edited and then recompiled and relinked.

Serial unit 1 communicates through memory register 177520 (177522) and 177524 (177526). These must be changed to 177530 (177532) and 177534 (177536) for serial unit 2. The RT-11/85 device handler interrupt vector must also be changed from 120 to 130. The UCSD Pascal PRINTOUT program must be recompiled after the change is made. Several other files are included at compilation time, so have them also available on the prefixed disk. Under RT-11/85, you must have

SYSMAC.SML on SY: for assembly. Name your linked output file with a .SYS extension.

Q: How do I access the printer from my own software?

A: Under RT-11/85, add the command lines to install the device handler and assign it to logical device LP to your STARTS.COM file. For example,  
INSTALL SL  
ASSIGN SL LP

would be the two lines added in the STARTS.COM (or STARTF.COM) file.

Then in your source program, all you have to do is OPEN or ASSIGN a logical unit number to the device LP:. See the ASSIGN or OPEN statement in the FORTRAN User's Guide, or the OPEN statement in the BASIC-11 Language Reference Manual. Under UCSD Pascal, you can write to the printer through REMOUT:. You may find it necessary to write a carriage return and line feed at the end of each line output to REMOUT:. No special protocol handling is performed for REMOUT:. If you require this handling, look at the procedure PNTBYT in the source code for PRINTOUT. You can extract the code you need and possibly put it into a unit library.

## Hardware Hints - Preventive Maintenance

By Dave Delster

Preventive maintenance on computer hardware is extremely important for the wellbeing of the entire system. With the Terak 8510/a, the user can perform easy maintenance tasks which will extend the life of the Terak 8510/a considerably.

At least once every 30 days, the filters on the rear of the 8510 should be cleaned. This is easily accomplished by removing and cleaning the filter with a vacuum cleaner. To remove the filter, push in on the nylon retaining ring and

rotate it clockwise until the four tabs have cleared the retaining slots. Pull the filter gently out, being careful not to puncture the foam filter. Use a good vacuum cleaner to remove the dust particles. DO NOT WASH THE FILTER! Reinstall the filter by inserting the filter back into the holder, pushing in slightly, and then rotating the filter counter-clockwise until the tabs are locked into the retaining slots. Release the filter and it will fit snugly into place.

Every six (6) months, the diskette drive read/write head should be inspected and cleaned. The only diskette drive head cleaning diskette that is certified by Shugart & Associates is the Innovative Computer Products #FD-08. Through extensive testing, Shugart has found that other cleaning diskettes will grind the read/write head down with their abrasive surfaces. Below is the necessary information for ordering the Innovative Computer Products cleaning diskette.

If you do not have access to the FD-08 cleaning diskette, then a cotton ball and isopropal alcohol (91% minimum strength) can be used on single or dual density disk drives only. This requires removal of the disk drive from the housing cabinet to gain access to the diskette read/write head. First remove the cover of the 8510/8512/8515. With an 8510 or 8515 it may be necessary to remove the circuit boards from the back plane. Gently lift the pressure pad arm which is positioned over the read/write head. Inspect the pressure pad for signs of wear or accumulated oxidation. If this pad looks dirty it may be a candidate for replacement. While holding up the pressure pad arm, gently swab the read/write head with the alcohol soaked cotton ball. Let the head air dry for about 15 seconds before releasing the pressure pad arm. Restore the circuit boards on the 8510 or 8515. Replace the cover for the 8510/8512/8515. This simple procedure

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Word Processing  
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Psychological experiments, pilot studies, data  
analysis

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interfacing with analog world, RTTY, Games

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CAI  
Introductory Computer Programming in Pascal  
Statistics

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Word Processing  
Numerical Methods

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Word Processing  
Networking with VAX 11/750 (DECNET)  
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CAI, CMI, Simulation of biological phenomena  
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Languages - Pascal, Modula, C

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Laboratory use of Terak with ATD-D/A capabilities  
Word Processing

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Hospital Information Systems  
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3-D Graphics  
Process Control and simulation  
Games

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 Use of evoked potentials to psycholinguistic  
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Computer Assisted Instruction  
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Computer Aided Design  
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On-line data entry with super-imposed diacritical  
 marks

Future project using color graphics

# Terak User's Group Membership Form

Please enter me as a member of the Terak User's Group for the year ending June 30, 1982. At this time no dues are required.

(Please type. All submitted forms will be photocopied.)

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Organization \_\_\_\_\_

Address \_\_\_\_\_

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Country \_\_\_\_\_ ZIP/Postal code \_\_\_\_\_

Phone (\_\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_ ext. \_\_\_\_\_

### Computer System

Terak 8510/a \_\_\_\_\_ Terak 8600 \_\_\_\_\_

8512 (number) \_\_\_\_\_ 8515 (number) \_\_\_\_\_

Printer (type) \_\_\_\_\_

Other Hardware \_\_\_\_\_

\_\_\_\_\_

### Operating System

UCSD Pascal V1.5e \_\_\_\_\_ UCSD Pascal V2.0 \_\_\_\_\_

RT-11/85 V2C \_\_\_\_\_ RT-11/85 V3B \_\_\_\_\_ RT-11/85 V4 \_\_\_\_\_

Other \_\_\_\_\_

### Languages

UCSD Pascal \_\_\_\_\_ OMSI Pascal \_\_\_\_\_

SVS FORTRAN \_\_\_\_\_ FORTRAN IV \_\_\_\_\_

BASIC \_\_\_\_\_ C \_\_\_\_\_

Macro-11 \_\_\_\_\_ Other \_\_\_\_\_

Interests

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I hereby grant permission to the Terak User's Group to publish or otherwise make the above information available to other members of the Terak User's group.

Signature \_\_\_\_\_ Date \_\_\_\_\_

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