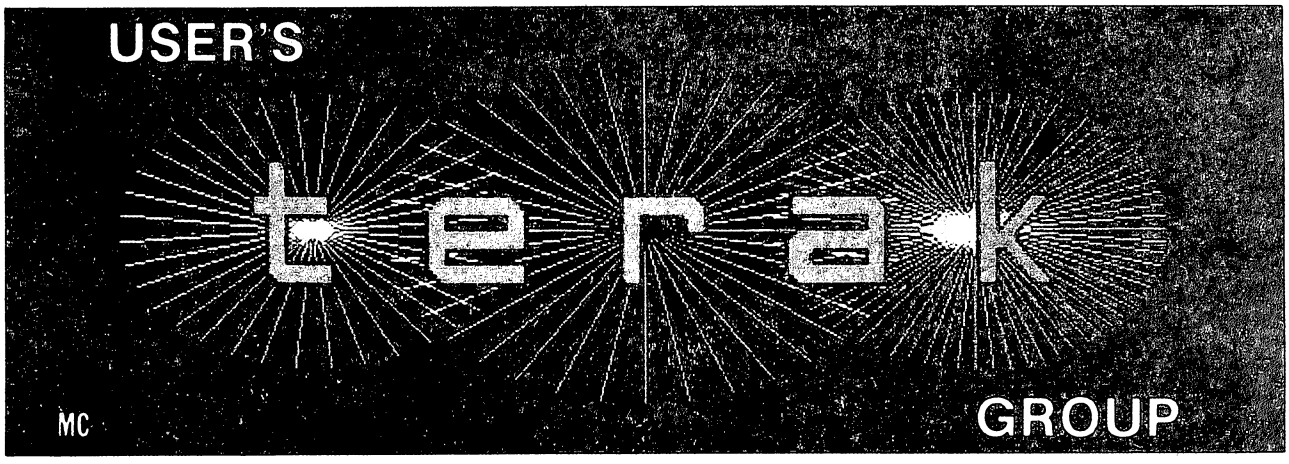



**Volume 2, Issue 1** **April, 1982**

# NEWSLETTER

**In this issue:** **Page**

Terak User's Group Newsletter, Volume 2, Issue 1.




The Terak User's Group Newsletter is published by the Terak User's Group.

Editor - Jerry Grady
Associate Editor - Marie Corbin
Writers - Jerry Grady, Rob Huggins

## From the Editor

by Jerry Grady

HELP!!! That is an impassioned plea for assistance. The Terak User's Group is slowly becoming a healthy organization. There are currently over 300 members at this writing, and undoubtedly more on the way. Three issues of the quarterly Newsletter have been published about once every five months and two editions of the Terak User's Group Bulletin of Available Terak Software (TUGBOATS) have been published as well. Like everything else, doing all of this takes time. And that is the one thing that is in shortest supply around here.

It is time to request that other members of the Terak User's Group take an active interest in the survival of this organization. Has the User's Group been in any way helpful? Has it presented anything of interest to you? If the answer is yes then you know that there is a need for the User's Group. If the answer is no, then you should let us know what you want to see. In either case any offers of assistance or contributions of articles are requested. This is a Terak User's forum and is intended to inform your colleagues as well as other Terak users what is going on in the world of computing.

As with most User's Groups, everything is accomplished by volunteers. And a lot of interested volunteers are needed right away. The Terak User's Group needs a full slate of officers - President, Vice President, Secretary, Treasurer, and Newsletter Editor. The Librarian post will continued to be filled by a Terak representative.

Since the organizational meeting in August in Dallas, there has been no other meeting of the Terak User's Group. We are looking for someone who will take the responsibility of setting up a two day, weekend meeting anywhere in the country. Preference will be given to areas that can offer accomodations to suit 100 to 200 people. This volunteer must be a tireless individual and an enthusiastic organizer.

Anyone that wishes to offer their time and efforts on behalf of the Terak User's Group, please write to

Jerry Grady
Terak User's Group
14151 North 76th Street
Scottsdale, Arizona 85260

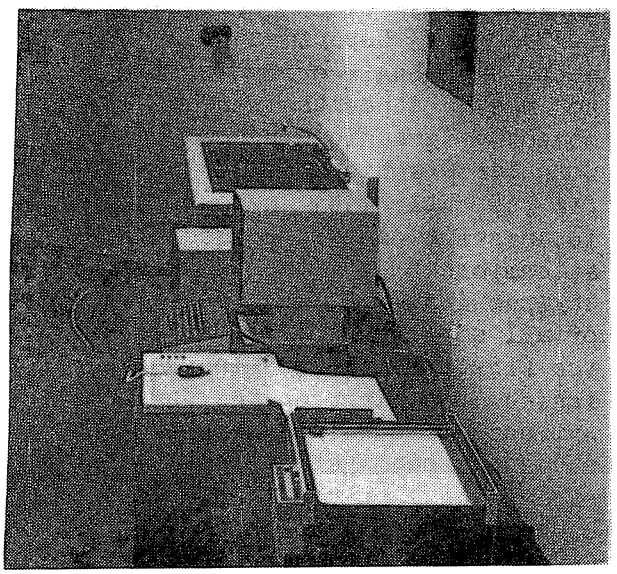
## U of A Uses Computer Aided Drafting

A new teaching laboratory in the University of Arizona Civil Engineering Department is the first step in an Engineering College program to keep students abreast of the computer graphics revolution. The Computer Graphics Lab was put into use for the Fall 1981 semester to teach interactive computer-based drafting as a component of the Freshman level engineering drafting course required of all engineering majors. The lab is the first of its kind in the college, indeed the first on the University of Arizona campus where lower division students can get formal hands-on experience with an interactive computer graphics system. Computerized teaching facilities of various kinds are to be set up in all areas of the Engineering College.

Dr. Terry Triffet, associate dean of the University of Arizona Engineering College said, "We're constantly faced with cries from the high technology industries saying, 'Give us engineers who understand how to use computerized graphics systems.'" There are several reasons the University of Arizona decided to institute the program, Triffet said. Most importantly it allows students to "interact" directly

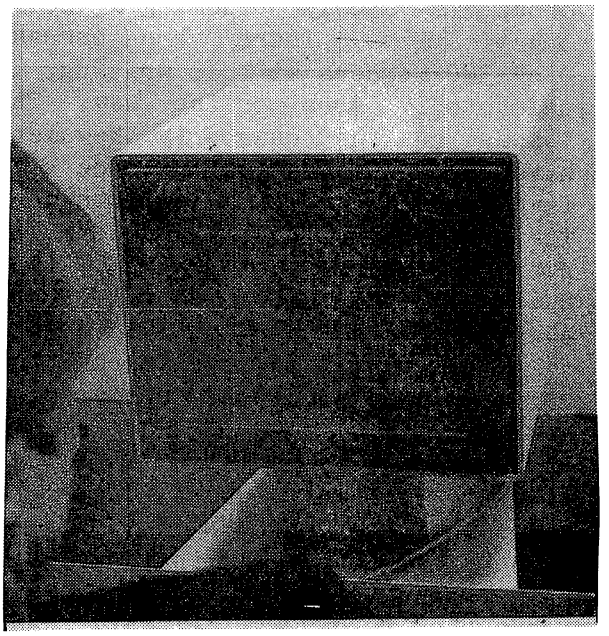
with the computer. They receive immediate responses, as opposed to the card and keypunch method used by undergraduate students in other computer-based courses.

The Graphics Labs consists of 8 Terak 8510/a Black and White Graphics Computer Systems. Each station has a Houston Instruments HIPad digitizer attached for interactive graphical input. Every two systems share a Houston Instruments HIPlot plotter for obtaining hard copy output of finished drafting projects, and there are two serial printers with graphics capability.



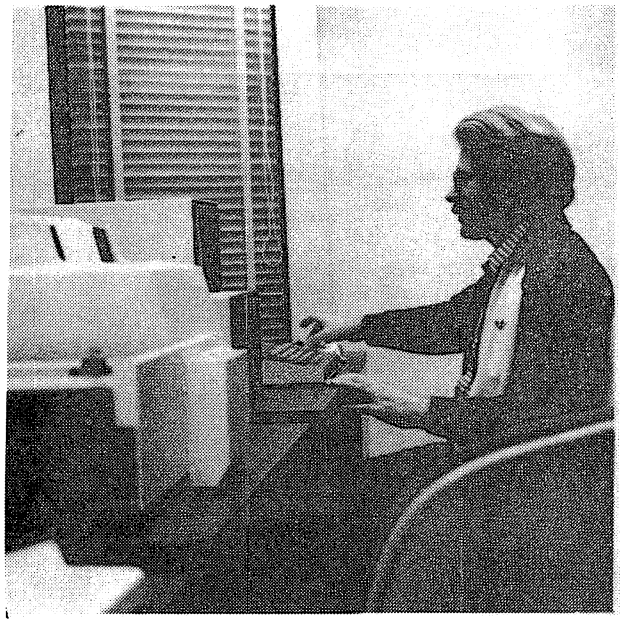
One of the graphics workstations

The software for the course was written by T & W Systems of Fountain Valley California. The software package, T-Square, is especially designed for two dimensional drafting using the Terak 8510/a. Input can be either from the keyboard, or, as is most common, from the digitizer. Output of a generated screen image may be saved on a file for later editing or may be directed to the plotter for hardcopy. PASCAL is the source language for the T-Square, but the students need not know anything about this or any other language in order to produce their engineering drawings.



Drafted image appears on the screen

Louis "Nick" Nelson, the course instructor, said only 10% of the students who come into his classes have had real contact with computers. At first the students are slightly awed by the computers, but within the first hour "they are sitting there, happily punching buttons," he said. Nelson said he teaches 380 students, who use the computer in groups of eight, so the machines are in continuous use. Many spend more than the allotted class time on the computers.



Instructor Nelson at work

The HIPad digitizer allows a student to make an engineering drawing by moving a cursor around the surface of the digitizer. A menu presented at the top of the CRT screen has items selectable by positioning a cross-hair cursor over the item and then pressing a button on the cursor. The student can transmit information to the computer for constructing lines, circles, ellipses, and other desired shapes in the needed orientations. These shapes make up the drawing and are stored in memory as well as being displayed on the monitor screen. The drafting program allows modifiction of the drawing through "erase" and other commands. When the student is satisfied with the drawing, a "plot" command is given and the finished drawing is transmitted to one of the plotters. The finished drawing is also typically saved on floppy disk for permanent storage at the end of a session.

In addition, this system can also be used for much more than just drafting, including solving mathematical and scientific problems and for word processing. Having independent work stations gives students a much greater opportunity to familiarize themselves with the capabilities of computers.

Student response to the classes has been positive. Only 10 to 15 percent of more than 380 students registered in the first semester had any prior contact with interactive computing. Student enthusiasm is high and the students quickly come to feel completely at ease with the systems. A short session with a "Space Invaders" type video game obtained from the Terak User's Group during the first class helps to overcome even the most timid students' apprehensions of the keyboard and hardware. Mr. Nelson feels such games are actually helpful teaching tools when used properly.

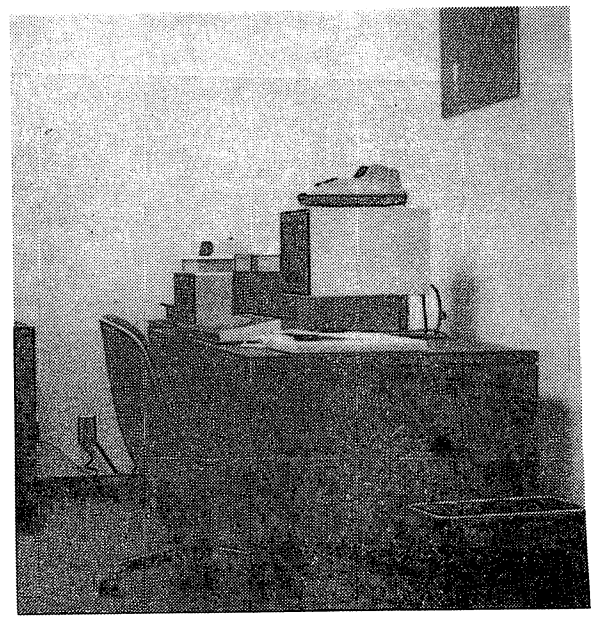
Students learn system use quickly

Computer knowledge is absolutely necessary for future engineers and computer courses are, in effect, a required part of the engineering curriculum. "This is the new look in engineering," Dean Triffet says. "In the '50s, you could recognize an

engineer by his slide rule; in the '60s and '70s, by the calculator hanging from his belt. In the '80s, you are going to recognize them by the floppy disks hanging out of their backpacks."

The computerized component of the class currently comprises about 10% of the total hours students spend in the drafting lab. Plans to add additional graphics stations in the future would increase this appreciably while the development of more powerful software in subsequent semesters will also increase the value of the learning experience.

The capabilities of two of the computer work stations in the lab have been expanded beyond those needed strictly for graphics work.. One has a second disk drive unit to copy and modify disks and perform other tasks necessary to the development of new programs. In addition, it and an adjacent station have been connected to a VAX 11/780 mainframe giving access to the VAX by professors and graduate students. Information is transferred back and forth between the two computers. Since the Terak is not just a terminal but a stand-alone work station, it uses the capabilities of the VAX to augment its own computing power, providing increased flexiblity to the user and a lighter load on the mainframe.



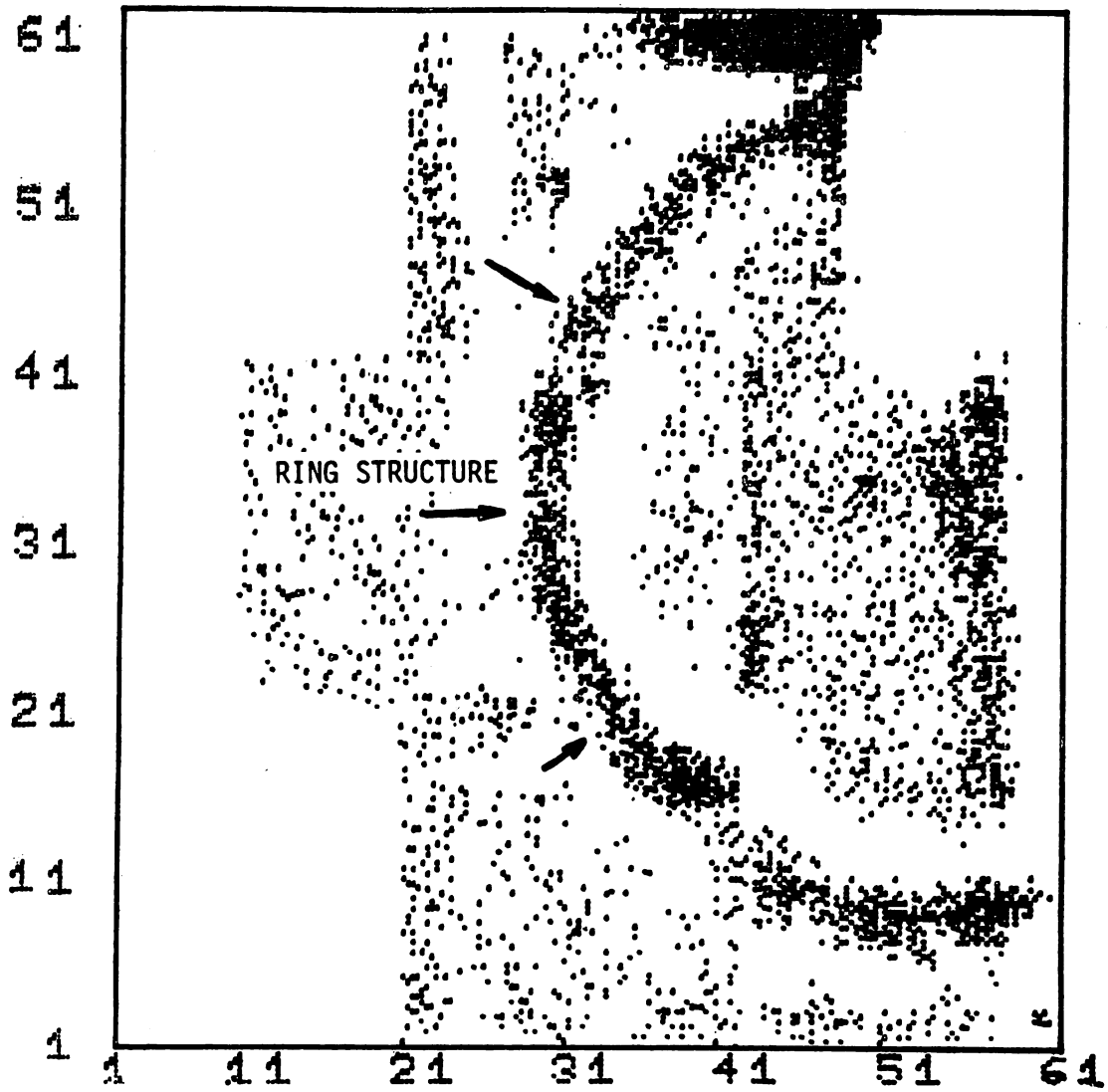
Two stations connect to a VAX 11/780

The Engineering College plans to expand the system by joining it to a large scale, high data rate network, allowing students to do larger, more complex programming. The computerized systems are more than just "a matter of engineers' enthusiasm," Dean Triffet says. "The die is cast; computers eventually will become an integral part of everyone's life."

## Microcomputers in Archaeophysics

by R. Huggins, Spectrum Geophysics
J. Weymouth, Nebraska Center for Archaeophysical Research (NEBCAR)
University of Nebraska

The microcomputer is having a pronounced effect on the collection and interpretation of information in archaeology, as in many other fields of scientific endeavor. This is particularly true for the remote sensing subdisciplines such as archaeological prospection, which is our primary interest at Spectrum Geophysics. This field utilizes some of the theories and field techniques

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of geophysical exploration applied in the search for minerals and oil, and scales them to assist in the search for buried archaeological features. For example, measurement of the earth's magnetic field over archaeological sites, one of the more commonly used methods, can indicate the presence of architecture, burned features or areas of general cultural activity. Estimation of moisture distribution through measurement of induced electric fields in the ground helps infer the location of ditches and other large structures. These types of search techniques leave the cultural resource undisturbed and undamaged, an important part of preserving cultural heritage.

We utilize microcomputers mainly in two contexts in examining these data: 1) either as a preprocessing tool to assist in the selection of parameters for suitable display and enhancement on larger computers or 2) to generate final displays and reports in instances where the data requires less manipulation.

At NEBCAR, a Terak 8510/a is used for preliminary processing of data originally entered onto the hard disks of a mainframe IBM 360. The Terak is programmed as a terminal to converse with the 360 and to move data onto the Terak floppy disks. A package of programs utilizing the Terak graphics can produce profiles, contour maps and dot-density maps. In addition, the data can be convolution filtered and remapped. Model calculations can be carried out, mapped and compared with the measured data. A hardcopy of the maps displayed on the graphics screen can be produced by means of an x-y plotter. An example of such a result, a dot density map, is shown in Figure 1. Parameters selected by these procedures can be applied to the graphics produced on the mainframe 360 which are done by means of SYMAP or line contour output.

At Spectrum Geophysics, a company formed to provide remote sensing services, a TERAK 8600 is used for entry, enhancement and display of geophysical data. Measurements collected in the field are entered into the Terak by means of an interactive checking routine which notifies the user if any of the data appears unreasonable. A convolution filtering routine developed by NEBCAR is used to enhance areas of interest or to remove unwanted trends. When the data are suitably reduced, they are interpolated and displayed on the 8600 color screen with the magnitude of the measurements keyed to a color scale. Values of the color map RAM can be interactively altered to assist in enhancement of particular features without recalculation of the entire data matrix. The zoom and pan capabilites of the computer are used to examine smaller areas on the maps without having to rely on a more time consuming software driven interpolation. When the map is in final form, the text routines are used to annotate the result before it is photographed directly from the screen.

Both as a supplement to a larger computer or as a stand alone device, microcomputers are playing an increasingly important role in the processing and display of geophysical data in an archaeological context. The lengthy turnaround times associated with mainframes can be shortened by advance selection of processing parameters to reduce the number of runs. When coupled with additional display systems like the Terak 8600, it appears that they can provide a suitable processing and display system especially when cost is a concern.

## Printing Under UCSD Pascal

In the last issue of the Terak User's Group Newsletter, we covered how to

connect your serial printer up to the Terak Serial Interface. For users of RT-11, it now a relatively simple matter to install the appropriate device handler for their particular printer as detailed in the article. For users of UCSD Pascal, it is a bit more difficult.

The program PRINTOUT as distributed on the original Terak Software Kit or as distributed by the Terak User's Group Library will allow a user to output text files already stored on a disk. But what do you do to output to the printer from a program? It is possible to extract the necessary code from PRINTOUT and create a library of those routines for use by your application programs. But it would be so much easier to use the Pascal statement REWRITE(fp, 'PRINTER:') and then WRITE(fp,'text'). As distributed, the Terak version of the UCSD system interpreter is set up to output to a parallel printer interface. Since most Terak systems are purchased with a serial interface for its flexibility, the system will produce an execution error "NIL POINTER REFERENCE" if the above statements are executed. However, there is another alternative.

It is possible to patch your system interpreter in such a manner that the output can be directed to a serial interface port. This patch requires the modification of the current device handler within the system interpreter so all conventions used by the system can be used to output to the PRINTER: unit. This device handler has been set up to monitor Data Terminal Ready (DTR), pin 20 of the serial interface. No special protocol handling is done, so it is possible that printers such as the Diablo, Spinwriter, or Sanders may drop characters unless DTR protocol is used to indicate that the printer buffer is full.

To do this patch you must be able to accurately convert hexidecimal to octal to decimal and vice versa. If you have trouble dealing with these number systems, do not attempt to do this conversion or serious damage to your system interpreter may result. Before attempting this patch, it is absolutely necessary to create a working copy of the disk you wish to patch. This is for your own protection. After the patch has been sucessfully completed and tested, you may then copy the patched system interpreter to all of your working system disks.

To patch the system interpreter:

eX)ecute PATCH. This program is found on the UCSD utilities disk of the distributed software kit.

Type G to G)et a file. When asked enter SYSTEM.8510.QB, SYSTEM.8510.QX, or SYSTEM.8510/A depending upon which system interpreter you wish to patch.

Type R to R)ead a block of the file. Enter 0 when asked for a block number.

Type V for V)iew to look at the contents of that block. The numbers printed around the edge of the screen are in decimal. These are the numbers referred to when it is said to change a location.

Look at the contents of location 128, in this example E624. This is the current address of the printer device handler. Write that value down as VAL. It is in hexidecimal.

From Appendix F of the Terak 8510/a Installation and User's Guide, determine the serial unit number that the printer will be set for. DO NOT USE UNIT #1 and DO NOT USE UNIT #3 WITH AN LSI-11/23. For example, serial unit 2 has a vector of 130 and a base address of 177530.

Convert the vector of the serial unit you have chosen from octal to decimal. Add 4 to this value to get ADDR. For

example, serial unit 2, vector 130 octal = 88 decimal. ADDR = 88 + 4 = 92.

Change the contents at the above calculated location to the same as location 128, in this example E624. To change the contents of a location, type T for T)ype mode. Use the cursor arrows on the key board to position the cursor on top of the first number at a location. Then type F for F)ill. Enter 1 for the number of bytes then enter Hxx, where xx is the first two digits of the value to be entered. Type F for fill again. Enter 1 for the number of bytes, then enter Hyy where yy is the second two digits of the value to be entered. See the example below for detailed keystrokes.

Now change the next location to contain 8000 hexidecimal. For example, change ADDR + 2 (94) from 0000 to 8000.

Quit T)ype mode by typing Q. Type S to S)ave the block just modified.

Now byte swap VAL. This means put the second two digits in front of the first two digits, so that E624 becomes 24E6.

Convert the new number to octal. For example 24E6 hex is 22346 octal.

Remember the upper two digits of this octal number as BLK. Remember the lower three digits as ADDR1. For example 22346 has BLK=22 and ADDR1=346.

Now convert BLK to decimal. BLK = 22 octal = 18 decimal.

Enter R for R)ead. Enter BLK as the blocknumber to be read. Type V for V)iew.

Now convert ADDR1 to decimal and subtract 42 from that number. For example, ADDR1 = 346 octal = 230 decimal. ADDR1 = 230 - 42 = 188.

Location ADDR1 should contain hexidecimal 4CFF while ADDR1 + 2 should contain 4EFF. Let VAL1 be the base address of the unit you chose plus 4. Change ADDR1 to the byte swap of VAL1. Change ADDR1 + 2 to the byte swap of VAL1 + 2. For example, the base address of serial unit #2 is 177530 octal. This is FF58 hexidecimal. FF58 + 4 = FF5C. Now byte swap and it becomes 5CFF. So location 188 would be changed to 5CFF. ADDR1 + 2 is the byte swap of VAL1 + 2, so location 190 would be changed to 5EFF.

Now find ADDR1 + 220. This location should contain FD81 hexidecimal. Change ADDR1 + 220 to one of the following values:

A000 If Data Terminal Ready is not used by your printer. With this value, characters may be dropped at high baud rates.

FD80 If Data Terminal Ready is low when your printer is ready to receive characters.

FD81 If Data Terminal Ready is high when your printer is ready to recieve characters.

One of the above values will work with your printer as long as no special communication protocol is required by your printer (i.e. ETX/ACK, XON/XOFF).

All of the calculated addresses are modulo 512. If one of your calculated addresses is greater than 512, subtract 512 from that address and then type F for F)orward to look for the new address in the next block. Make sure you S)ave any block you may have modified.

The following is a sample patch for the file SYSTEM.8510.QB, dated 25-Sep-80, and is 24 blocks long.

Example:

For this example, the UCSD Pascal system interpreter will be patched so that the unit PRINTER: will output through serial unit #2. The vector for serial unit #2 is 130 octal or 88 decimal. The base address is 177530 octal or FFE8 hexidecimal.

X)ecute PATCH.
Type G for G)et. Enter SYSTEM.8510.QB for the file to be patched.
Type R for R)ead. Enter 0 for block 0.
Type V for V)iew.
Location 128 contains E624.
ADDR = 88 + 4 = 92.
Type T for T)ype.
Using the cursor arrows, position the cursor at location 92. Ignore the "C"s being output. This is a bug in PATCH.
Type F for F)ill.
Enter 1 for number of bytes.
Enter HE6 for pattern of fill.
Type F for F)ill.
Enter 1 for number of bytes.
Enter H24 for pattern of fill.
Type F for F)ill.
Enter 1 for number of bytes.
Enter H80 for pattern of fill.
Type Q for Q)uit.
Type S for S)ave to save block 0.
VAL = E624. The byte swap of that is 24E6. 24E6 hex = 22346 octal.
BLK = 22 octal. ADDR1 = 346 octal.
BLK = 22 octal = 18 decimal. Type R for R)ead. Enter 18 for the block number. Type V for V)iew.
ADDR1 = 346 octal = 230 decimal.
ADDR1 = 230 - 42 = 188.
Type T for T)ype. Move the cursor to location 188.
VAL1 = 177530 octal + 4 = 177534 octal = FF5C hex. VAL1 byte swapped is 5CFF.
Type F for F)ill. Enter 1 for the number of bytes.
Enter H5C for pattern to fill.
Move the cursor to location 190. Type F for F)ill.
Enter 1 for number of bytes. Enter H5E for pattern of fill.
ADDR1 + 220 = 188 + 220 = 408. Move the cursor to location 408.
This patch is being installed for a Paper Tiger 440 with DTR protocol. When the printer is ready to accept characters, DTR is low. So location 408 will be changed to FD80. Type F for F)ill.
Enter 1 for number of bytes. Enter HFD for pattern of fill.
Type F for F)ill. Enter 1 for number of bytes.
Enter H80 for patter of fill.
Type Q for Q)uit.
Type S for S)ave of this block.

This system interpreter is now patched. Reboot the system for the patch to become effective. Enter the F)iler and type V to view the V)olumes. PRINTER: is logical unit #6. Connect the printer to the serial port. Now, following Appendix F of Terak 8510/a Installation and User's Guide, set the pencil switches for the serial interface. Type L for L)ist directory. Enter #4:,#6: to list the directory of your system volume on the printer. If it does not work properly, first check your hardware setup to make sure all switches are set properly. Then review your calculations for the patch. This patch is known to work on all system interpreters distributed by Terak. No guarantee is made for system interpreters distributed by other sources.

## Terak Offers Hardware Training

Hardware training classes were offered by the Terak Corporation during the months of February and March, 1982. These courses lasted two and one half days and covered techniques for maintenance and trouble-shooting of Terak Graphics Computer Systems. The

cost was $450.00 per student and class size was be limited to 8 students. All course materials were provided by Terak. The student is responsible for all travel and living arrangements during the training course.

If you missed your chance to attend one of these exciting and informative classes, find out when the next classes start. For more information, contact Ms. Connie Perry, Training Coordinator, Terak Corporation. Phone: (602) 998-4800.

## New Library Additions

Several changes have been made to TUGBOATS since its printing in January. Update pages will be issued at a later date, but for the time being here are the items of interest:

### Deletions

Page: 5-4
Subject: Word Processing
Title: RSI PROFF and FORML
It appears as though Renaissance Systems, Inc. is no longer in business. A new document formatter from Chapin and Associates will be listed at a later date.

### Changes

Page: 4-1 and 4-2
Subject: Data Base Management
Title: RTFILE
International Computing Company has merged with Continental Telephone Company and is now Contel. The new address for RTFILE and STAR-11 is

Robert Natale
Contel Information Systems
4330 East-West Highway
Bethesda, MD 20014
(301) 654-9120

### Additions to the Library

Number: RT3B-80-0017 Rev 0
Title: RUNOFF Document Formatter
Author: Robert Denney
Description:
RUNOFF is the DECUS verion of a document formatter. It requires the user to imbed formatting commands in a text file and the process that text file using the RUNOFF document formatter. This software was obtained from DECUS and is copyright thereof.
Requirements:
Software: RT-11 V3B or later
Hardware: 8510/a or 8600

Number: RT3B-80-0018 Rev 0
Title: FLECS - A FORTRAN Preprocessor
Author: Terry Beyer
Description:
FLECS is a structured FORTRAN preprocessor developed at the University of Oregon. It features multi-line structured statements, DO-FIN, IF-FIN, UNLESS-FIN, WHEN/ELSE-FIN, CONDITIONAL-FIN, SELECT-FIN, etc. This software was obtained from DECUS and is copyright thereof.
Requirements:
Software: RT-11 V3B or later and FORTRAN IV
Hardware: 8510/a or 8600

To order this software, follow the procedures outlined in TUGBOATS, page 1-2.

## And Now a Word From Our Sponsors

[Editor's Note: Even though the title of this column may seem to indicate that the following entries were paid for, they were not. The software listed below has been submitted, as specified in TUGBOATS, for evaluation and inclusion in the TUGBOATS listings. Those entries are also mentioned on a one-time basis in the Newsletter. Anyone marketing commercial software and desiring mention in both publications should follow the procedures as outlined in

TUGBOATS for Standards for Library Submissions, making sure to note that the software is for sale as a commercial product.]

## Data Base Management Under UCSD Pascal

Pascal and Associates of Carrboro North Carolina offer a data base management system under UCSD Pascal. Pascal Data Management System (PDMS) is a system that computer owners use to solve their information needs in minimal time by applying generalized programs to structured data files. PDMS utilizes a columner data relationship. That is, for each major data entry, a row of columns is available to store the required, related data items. This package contains complete source files for the PDMS system and the user is required to compile the programs to build the initial system. It is not intended for the novice programmer, but does provide a solid foundation for the intermediate or advanced programmer that needs some data base capabilities and does not want to reinvent the wheel.

A complete set of utilities for creating and maintaining the data base is provided. Programs such as CREATE, which allows you to specify the data base structure, and EDIT, for data entry and modification, provide the needed tools for manipulating the data base. GENERATE is a unique program that outputs a program source that can be edited to output custom reports. The data base access and structure is generated for you.

PDMS is available by single or multiple system agreement. Source code is provided on single density diskettes. A dual drive, dual density system is recommended. For more information contact Pascal and Associates, 105 Phipps Street, Carrboro, North Carolina, 27510. Phone: (919) 942-1411.

## Cornell University Offers Software

Cornell University Decentralized Academic Computer Services (DACS) is offering digitizer and plotter software utilities and libraries for use on the Terak. This software facilitates the use of a Summagraphics BitPad 1 via a parallel interface and a Houston Instruments HIPlot plotter for entering and outputing graphics images using the Terak. For more information, contact Thomas Hughes, DACS, Uris Hall, Cornell University, Ithaca, New York, 14853. Phone: (607) 256-4981.

## Terak Announces Extended Warranty

The Terak Corporation is pleased to announce the implementation of an extended warranty agreement. Under this new program, a user may add an additional twelve (12) months of warranty coverage for a monthly maintenance charge. The cost of this service varies according to the equipment configuration.

Terak is also in the process of establishing depot maintenance in certain selected cities. On-site maintenance is also under consideration in those cities where the equipment population can support this activity.

For further information, contact Harold J. Asher, Terak Corporation, 14151 North 76th Street, Scottsdale, Arizona, 85260.

## Terak Adds Disk Capacity

The Terak Corporation has modified its pricing for the months of March and April. A discount of 20% is being offered to all customers who place an order and accept delivery before April 30, 1982.

The Terak 8510/a Monochrome Graphics System is now shipped with a dual density disk drive. This allows the user to read and write both single and dual density diskettes and gives the added disk capacity at the same price as the previous single density systems.

A quad density (double-sided, double-density) disk drive option is now being offered for the Terak 8510 Data Processor, 8512 Flexible Disk Subsystem, and 8515 Flexible Disk Bus Expansion Chassis. An added feature of the quad density disk drives is the ability to physically write-protect your disks. The quad density drive gives a full megabyte of diskette storage. A quad density drive will also read single and dual density diskettes.

For more information, contact Marketing, Terak Corporation, 14151 North 76th Street, Scottsdale, Arizona 85260. Phone (602)998-4800.

## Upgrades to Existing Systems Offered

The Terak Corporation has now announced that users may upgrade their current system to an increased functionality. In addition to the previously announced single to dual density or quad density disk upgrade, a user may upgrade his system to use an LSI-11/23 processor. The 11/23 upgrade includes a 64 Kbyte memory board to give the 8510 Data Processor 128 Kbytes of capacity. An optional 128 Kbytes of memory may be purchased for a maximum of 256 Kbytes of memory. This upgrade requires a dual or quad density system, so single density users must upgrade to dual density disk capacity at the same time. Both of these upgrades requires a return to the factory of the 8510 Data Processor.

In addition, a user may upgrade his current 8510/a Monochrome Graphics Computer System to have color capability. This means adding an 8600 Color Upgrade. With the upgrade comes a 13 inch color monitor and a Color Display Electronics Unit (DEU). This DEU communicates with the LSI-11 through a parallel interface which plugs into the LSI backplane and requires one dual wide slot. The 8600 may be used as either the console and graphics display device or as just the graphics display device with the 8510/a monitor remaining the user's console. Recommended options on the 8600 include 32 Kbytes of memory for extra character fonts and an additional 128 Kbytes of frame buffer memory.

For more information, contact your local District Manager or Marketing, Terak Corporation, 14151 North 76th Street, Scottsdale, Arizona, 85260.

## Membership Roster

As promised, here is the latest membership roster as of April, 1982. This roster has been sorted by zip code, and then organization and person within that zip code. Due to the limiting size of the roster, only new members will be listed in future issues.

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terak
CORPORATION

April 8, 1982

Terak User's Group Newsletter

Dear Terak Customer:

Welcome to the first issue of the Terak Customer Service Bulletin. This new monthly publication is intended to communicate service related information to Customers performing maintenance on their Terak systems. Topics covered will include:

- o Terak Engineering Change Orders (ECO's), which may affect systems in the field.
- o Preventive Maintenance Procedures.
- o Helpful hints on trouble-shooting hardware failures.
- o Changes in system diagnostics.
- o Additions to system diagnostics.

Your suggestions, comments and questions are always welcome. Please write me at the following address:

Terak Corporation
14151 North 76th Street
Scottsdale, Arizona 85260

Phone: 602/998-4800, Ext. 233

Sincerely,

Dave Delster
Supervisor, Product Services

DD/clp

April, 1982

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TELEX / TWX 9109500093 / TERAK SCOT

terak — **CUSTOMER SERVICE BULLETIN**

SB # 082001
DATE 4 / 8 / 82
PAGE 1 OF 3

**PRODUCTS AFFECTED:** 8510 & 8515

| PART NO. | DESCRIPTION |
|---|---|
| 92-0029-001 | PWB Assy, SW Power Supply - 8510/15 |
| 92-0019-010 | PWB Assy, Backplane - 8510/15 |

**DESCRIPTION OF PROBLEM:** The potential problem exists in 8510's and 8515's shipped before February 1, 1982. The problem is a low +5VDC going from the Switching Power Supply (92-0029-001) to the Backplane (92-0019-010).

The following are the symptoms typically seen:

1. Unreliable operation and intermittent failures of any type.
2. < +4.75 VDC measured across Pin 7 (GND) and Pin 14 (VCC) of TU on the Video Controller (92-0014-010).
3. Browning on Connectors J17, 18 and 19 on the Backplane (92-0019-010).
4. Browning on Connectors J1, 2 and 3 on the Power Supply (92-0029-001).
5. Is more prevalent with fully loaded Backplanes consisting of LSI-11/23 and additional Memory Modules.

**SOLUTION:**

Solution: The following parts will be needed:

| | Qty | Terak Part # | Description | Mfg. Ref. Nbr. | Manuf. |
|---|---|---|---|---|---|
| 1. | 2 | 21-0039-114 | Connector | 1-87983-4 | AMP |
| 2. | 1 | 27-0002-388 | 80.6K 1% ¼W | --- | --- |

FORM NO. 59-0086-001 REV A

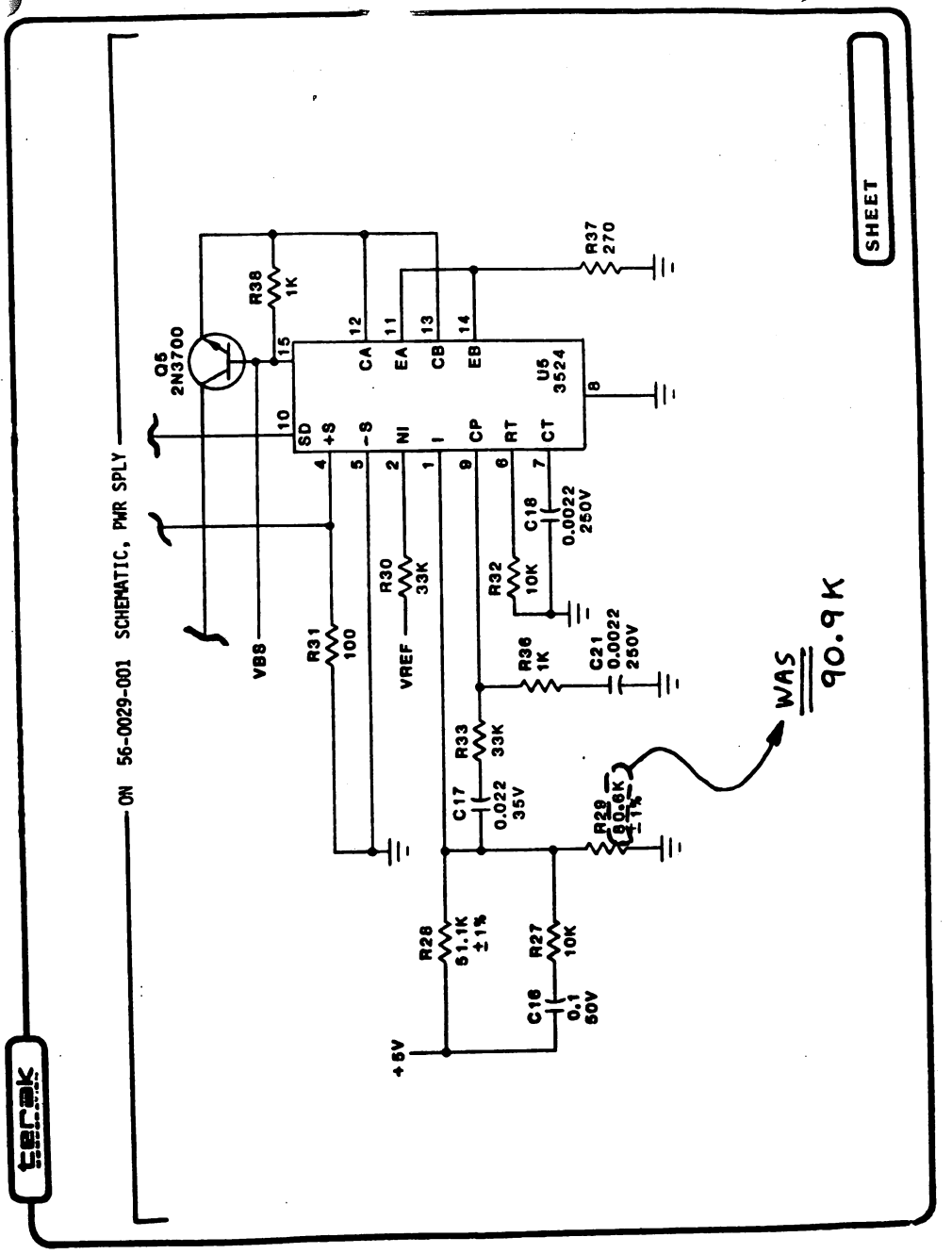
**SOLUTION (Cont'd):**

1. Replace Connector J6-J119 (21-0039-114) on the Backplane (92-0019-010).
2. Replace Connector J1-114 (21-0039-114) on the Power Supply (92-0029-001).
3. Clean Connector Header (21-0034-337) between the Backplane (92-0019-010), and the Power Supply (92-0029-001) with alcohol to remove the brownish tint.
4. Change R29 (90-OK 1% ⅛ Watt) on the Switching Power Supply (92-0029-001) with 80.6K 1% ⅛ Watt. (Refer to drawing on Page 3.) This change increases the +5 VDC to +5.1 VDC.

If more information is desired concerning this Service Bulletin, feel free to contact our Customer Service Department.

Phone: 602/998-4800, Ext. 233, 234 or 237





terak — CUSTOMER SERVICE BULLETIN

SB # 082003
DATE 5 / 1 / 82
PAGE 1 OF 3

**PRODUCTS AFFECTED:** 8510 & 8515

| PART NO. | DESCRIPTION |
|---|---|
| 92-0004-001 Rev H | PWB Assy, EIA 232-C Serial Interface |

**DESCRIPTION OF PROBLEM:** One of the most reliable assemblies used in Terak systems is the serial interface. This PWB assembly accounts for less than 4% of the total failures seen in Terak computers. Serial interfaces are typically easy to repair because 90% of their failures are attributed to a burned out Baud Rate Generator (4702). This component is located at B2 on the circuit board.

Symptoms typically seen are:

1. No output to a peripheral through the serial port.
2. SLUTST will fail by blanking the display after the test has been executed.
3. B2 has a blister in the middle of it.
4. No clock pulse is seen with an oscilloscope on Pins 17 & 40 of the 40 Pin UART (TR1602-B).

**SOLUTION:** This part will be needed:

| Qty | Terak Part # | Description | Mfg. Ref. No. |
|---|---|---|---|
| 1 | 25-0005-001 | Buad Rate Generator | F4702PC |

Replace B2 (4702 Baud Rate Generator). The 4702 is a static sensitive device, so care must be taken when installing it.





**SOLUTION (Cont'd):**

TERAK UTILITY PROGRAM

One of the test programs seldom used for fault isolation is the Utility Program which is located on the 8510/A System Acceptance Test diskette. The Utility Program is not a test that can be executed, but is simply a software supported version of Micro-ODT. (See Appendix H in the Installation & User's Guide for an explanation of Micro-ODT.

Unfortunately the SLUTST does not do a loop around test, so consequently a portion of the serial interface does not get tested. The Utility Program can be used to test this portion of the board. This is how:

1. With power turned off on the 8510 or 8515, short pins 2 & 3 of J1 on the SLU EIB with a small paper clip (refer to Figure 1). This will tie the X-mit & the receive ports together.
2. Boot the System Acceptance Test diskette.
3. Execute the Utility Program.
4. Write an ASCII "A" ($101_8$) into the X-mit buffer of the serial interface under test. The address for the X-mit buffer will differ depending on the setting of the unit select switches on the SLU EIB.

   If Unit #1 has been selected, we will use the following addresses:

   . X-mit Data Buffer (XDB) = 177526
   . Receive Data Buffer (RDB) = 177522

   Because the X-mit port is tied to the receive port, when we write into the X-mit buffer, the data will loop around and be received in the recieve data buffer.

   The following example demonstrates the logical procedure involved in accomplishing the above task. NOTE: The underlined characters in the example are characters which are outputted by the processor.

   EXAMPLE:

   ```
   ODT  V01-02                    Phase 1
   *177526/000000 101 <CR>        Phase 2 - Key in XDB address, data and carriage return
   *177522/000101                 Phase 3 - Contents of the RDB should be equal to the
                                            101(8) written in the XDB.
   ```

   NOTE: ALL NUMBERS ARE IN OCTAL.

   If the RDB does not reflect what was written in the XDB the following problems may be found:

   1. Paper clip is not shorting Pins 2 & 3 of J1 on SLU EIB under test.
   2. Faulty SLU EIB.
   3. Faulty serial interface.

terak

# CUSTOMER SERVICE BULLETIN

SB # 082002
DATE 5 / 3 / 82
PAGE 1 OF 2

**PRODUCTS AFFECTED:** 8518

| PART NO. | DESCRIPTION |
|---|---|
| 92-0029-001 | PWB Assy, SW Power Supply - 8510/15/18 |

**DESCRIPTION OF PROBLEM:** This bulletin is actually a continuation of SB #082001. We failed to mention that the 8518 could exhibit the same problem. The low +5VDC is diagnosed in a different manner than it is on the 8510 & 8515.

The following symptoms are typically seen:

1. Unreliable operation & intermittent failure of any type.
2. $\leq$+4.75VDC measured across Pin 7 (GND) and Pin 14 (VCC) of U79 on the SMS formatter PWB located on the plastic mounting posts above the drive.
3. May be seen on 8518's shipped before 15 APR 82.

**SOLUTION:** The following part # will be needed:

| QTY | Terak Part # | Description |
|---|---|---|
| 1 | 27-0002-388 | 80.6K 1% ¼W |

Change R29 (90.9K 1% ¼ Watt) on the switching power supply (92-0029-001) with an 80.6K 1% ¼ Watt Resistor. (Refer to drawing on Page 2.) This change increases the +5VDC to +5.1VDC on the DC power connector near the power switch.

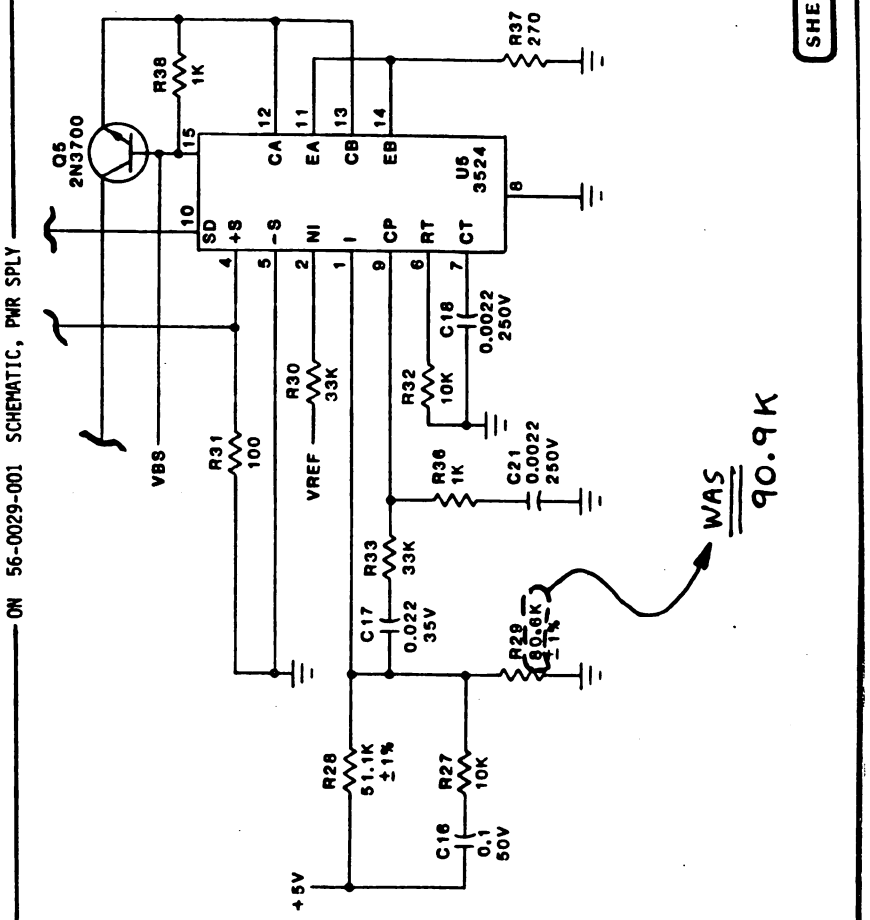
If more information is desired concerning this Service Bulletin, feel free to contact our Customer Service Department.

PHONE: (602) 998-4800 ext. 233, 234, 237





ON 56-0029-001 SCHEMATIC, PWR SPLY



terak — CUSTOMER SERVICE BULLETIN



**SOLUTION (Cont'd):**

SUMMARY: The Utility Program enables us to inspect and change processor and device registers and memory locations. Attempts to access non-existent memory locations will cause a trap through Location 4 which will take us out of the Utility Program and back to the operating system.

If more information is desired concerning this Service Bulletin, feel free to contact our Service Department.

PHONE: (602) 998-4800 ext. 233, 234, 237

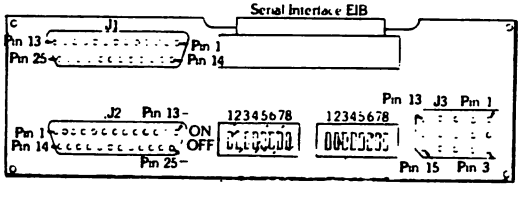



Figure 1

# 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.)

Name _____

Organization _____

Address _____

_____

_____

City _____ State _____

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 _____

Terak User's Group Membership Form

Interests

_____

_____

_____

_____

_____

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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