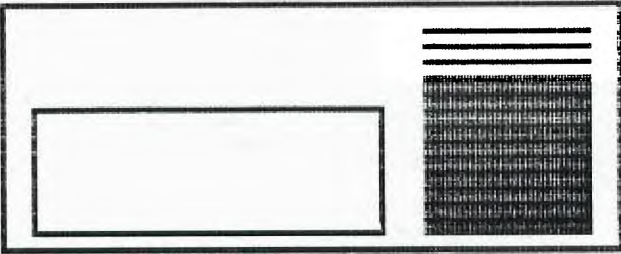


8703 (19)
Delaware

	THE DATA BUS	ISSUE : VOL. 5 NO. 2 - - - - M A R . 1 9 8 7
THE DELAWARE VALLEY USERS GROUP DEDICATED TO THE II AND COMPATIBLE HOME COMPUTER FAMILY P.O. BOX 6240 STANTON BRANCH, WILMINGTON DE 19804 4TH THURS. 6:30-9:30 P.M. CHRISTIANA MALL COMMUNITY ROOM <hr/> KENT COUNTY, DE COURTHOUSE <CHAPTER> DEPTFORD, NJ MUNICIPAL BLDG. 2ND MONDAY 7:00-9:00 P.M. <MEETING> 3RD MONDAY 6:45-9:00 P.M.		

Meeting Minutes
by Tim Evers-Secretary

The February meeting was held Wednesday February 25 at the Christiana Mall. UP Jim Davis brought the meeting to order.

Jack Shattuck presented the Library's Disk-Of-The-Month. The subject was Graphics. Jack reviewed the featured program EASY SPRITE, a freeware offering (\$10...Tom Freeman, 515 Alma Real Dr., Pacific Palisades, CA 90272)

Jim Davis solicited raffle suggestions from the floor. Jim announced the current raffle which is for a RAUE keyboard. Tickets are \$3 and the drawing will be held the night the break-even ticket is sold (62).

John Kelley reported on his work to get the TI-99 community in contact with the PLATO system on the U of D computer. Connect charges are \$2.50/hr 8 AM - 5 PM, \$4.50/hr 5 PM - 11 PM, and \$1.00/hr 11 PM - 8 AM. John was working to get a copy of a Plato Terminal Emulator. I believe that he was successful.

Barry Boland raised the issue of alternative meeting places. The following places were suggested: Del Tech, Del Castle Country Club, Goldy Beacom College, Stanton Elementary School.

Tim Evers (me) announced the Nominating Committee's Slate of Candidates for DVUG office:
Tom August - President
Jim Davis - Vice President
Tim Evers - Secretary
Tom Klein - Treasurer
Jim Folz - Sgt at Arms
Nominations were then solicited from the floor (none received) after which Tom, Jim, Tim, Tom, and Jim were elected by acclamation.

Plato
by John Kelley

Thanks to the efforts of Rae Stabosz, we now have a copy of a Beta program for use on the Plato system at the University. The program has some bugs but will work. Maybe someone out in the Orphan world can fix the bugs.

If your interested in signing up, call Rae at 451-8161 (Monday thru Friday) and she will sign you up and send you the software. The software will also be available from our club library. The docs for the program are very thin so you are on your own. Maybe Control Data would release the Source Code so we could fix the bugs in the system.

You will need a 1200 baud modem to access the system at the University, as well as 32K, disk drive, and Extended BASIC. I have added a loader to the disk that will allow you to use this with the Xbasic. It will also run from option 5 of the E/A.

(TIIBBS lists (302)734-7123 as the Kent County access and (302)855-9600 as the Sussex County access. Sign up fee is reported to be \$10. Ed)

MEETING
DATE
MARCH 26

DUUG EXECUTIVE COMMITTEE MEMBERS IN 1987

PRESIDENTTOM AUGUST
VICE PRESIDENTJIM DAVIS
SECRETARYTIM EVERS
TREASURERTOM KLEIN
SGT. AT ARMSJIM FOLZ
DELMARVA CHAPTER CHRCHUCK BOWER
SO. JERSEY CHAPTER CHRTONY DIFEBBO

DUUG BULLETIN BOARDS

(302)322-3999 Anytime
(609)429-7792 Monday-Thursday 3:00 PM-7:00 AM
Friday 3:00 PM-Monday 7:00 AM
(302)674-1449 6:00 PM-6:00 AM

For general information, you may contact
TOM KLEIN Pa. (215)494-1372
JACK SHATTUCK Del. (302)764-8619
BUTCH FISHER N.J. (609)783-8276

Delaware Valley Users Group membership includes:
library and software privileges, monthly DATABUS
newsletter, plus other special benefits. Annual
membership rates are: Family or Individual \$15;
Student \$10; Newsletter only (beyond 75 mi) \$10.

TRANSMIT YOUR NEWSLETTER COPY TO: The Data Bus
Editor --- Jim Folz, Telephone (302)995-6848, or
use the DUUG mailing address shown on Page One.
PLEASE SUBMIT NEWSLETTER ARTICLES FOR AN ISSUE
BEFORE THE 2ND THURSDAY OF EACH MONTH.

An article appearing in The Data Bus may be
reproduced for publication by another DV Users
Group as long as acknowledgement is given to the
sources as indicated. We encourage exchange
newsletters; mail to DUUG business address shown
on Page One.

DUUG ADVERTISING RATES FOR THE DATA BUS:
1/4 page - \$ 5/issue, or \$ 45/12 issues
1/2 page - \$ 8/issue, or \$ 75/12 issues
Full page - \$15/issue, or \$125/12 issues

DELAWARE VALLEY USERS GROUP MEETINGS

Plenary meetings: Delaware's Christiana Mall on
Rte. 7, at I-95 Exit 4-S, in the Community Room.
Enter between J. C. Penney and Liberty Travel
inside the Mall.

DELMARVA CHAPTER: Kent County Courthouse,
Basement Conference Rm #25, Green & State Sts,
Dover, De. Use the Green St. side entrance.

SOUTH JERSEY CHAPTER: Deptford Municipal
Bldg, Cooper Ave. and Dalsea Drive, (Rtes. 534 &
47), in Gloucester County. Enter and park in
rear of the building.

CONTENTS OF THE MARCH ISSUE OF THE DATA BUS:

Meeting Minutes Page 1
Plato Page 1
NOISE on The Data Bus Page 2
DUUG Software Library Notes Page 3
Using the CRU Lines to Read . . . Pages 4-6
Tibbs Page 5
T.I.C.O.F.F./Timonium Fest Maps Pages 7,10
Burglar Alarm Pages 8-9

NOISE on The Data Bus
by Jim Folz

Happy Birthday DUUG! February was our
anniversary month. Cake, elections, cake,
raffles, cake, old/new business and cake
characterized the meeting. I am still on a
sugar high. (Purposely, I spared you the old
"Let them eat cake" routine). Now, on to the
news.

Remember, T.I.C.O.F.F. is scheduled for
March 28, 9:30 - 4:00, at the Roselle Park High
School. Admission is \$5.00. See Page 7 for a
map to this event. Don't miss this one. This
is big time!

On that same weekend, there is a
computerfest scheduled at the Maryland State
Fairgrounds, Timonium, Maryland. This is a two
day event (March 28 and 29). Starting time is
8:00. Admission is \$4.00. A map is included on
Page 10.

Mark your calendar for the Trenton Computer
Festival. This event is scheduled for 9:00 -
6:00 on April 11 and for 10:00 - 4:00 on April
12. Admission is \$7.00 on Saturday (for two
days) and \$5.00 on Sunday. The event is held at
the Trenton State College (off Rte. 31 in
Trenton).

The March meeting of the Christiana group
is scheduled for Thursday, March 26, at
Christiana Mall. The meeting schedule is unsure
for the balance of the year. Watch this column
for meeting notices.

At the March meeting, Jim Davis plans to
give a primer/refresher on BASIC disk accessing.
Be sure to catch this master of the written (eg.
UMBW) 2 bytes (word).

Please see me at the March meeting if you
are planning on going to T.I.C.O.F.F. Since we
will have a table there, we need VOLUNTEERS to
(wo)man said table.

Don't forget that the Christiana group is
raffling off a RAVE keyboard. Chances are \$3.00
each and the drawing is to occur on the night
that the breakeven ticket is sold. Don't miss
out!

(Not) Many people have asked whether we had
a professional cartographer draw up the map
that appeared in the last issue of The Data Bus.
The answer is that the individual was a
professional but not a cartographer.

NEWSLETTER EDITORS take note. Starting
with the September 1986 DATABUS, articles
appearing there have been placed in the DUUG
library. Anyone interested in these or other
DUUG holdings should contact us at the address
on Page 1.

ATTENTION DUUG MEMBERS! The Treasurer asks
that transactions with the group be made using
check. This makes it much easier to keep track
of the money (particularly renewals/new members)

Speaking of renewals, please check your
renewal date. This is the time of year when
many of the memberships expire.

The Few, the Proud, the Newsletter Editors.

DELAWARE VALLEY USERS GROUP - PAGE 3

DVUG SOFTWARE LIBRARY NOTES
by Jack Shattuck

"DONATION SOFTWARE" DATA BASE RECEIVED

(Ed. Note - Jack was awarded a copy of "Old Dark Caves 2", normally selling at \$19.95, for coming in as a runner-up in Computer Shopper's II FORUM software contest of 1986. His revised version of the "Kandy Dandy Adder", published in The Data Bus last July (Vol. 4:6, pp. 6-7), placed in the XBasic category of public domain work. That was his sole programming effort in several years, so don't be shy! You, too, can contribute to the world of II public domain software. Try it!)

That's a good name for Fairware; the author of "RECORDS/PLUS", Steve Risner from California, sent a sampler of his card-bcx like system last month to DVUG. Rich Jabkowski has been looking at it and some other data base programs, and is anticipating a report or write-up for us soon.

What the author properly calls a "donation incentive" is his offer of disk labels, updates, and - most important - a "professionally written and illustrated" manual available, depending on the size of the donation.

QUALITY 99 SOFTWARE NEW OFFERINGS NOTED

March's Disk-of-the-Month includes 8 BASIC, one TE II (BASIC) Speech, and 4 XBasic education choices. The LOAD program enumerates which is which, and runs in BASIC (but it is NOT an auto-loader). Inclusions are from geography, music, math, spelling, astronomy, and social studies. A pleasant artificial intelligence sampling can be found as well (ANIMLGUESS).

Larry Hughes has issued Catalog #23, which carries sales prices through May 30 (a carryover in most cases from his last catalog sale prices) and has included the newest collection (Vol. 3) of Draw 'N' Plot pictures (10 more) at \$9.95.

The month's programming lesson, encountered in preparing the monthly disk, involved getting printer listings of screen text without retyping the entire data and without guessing at the printer codes for screen dumps.

Also new is a Maze Maker which can generate numerous random mazes (always one entrance and one exit) for a wide variety of printers (MUCH APPRECIATED!), at \$9.95, and the Spad XIII World War I airplanes combat flight simulator, \$27.95 - developed by Not-Polyoptics. All Q99's products use 32K assembly language routines from XBasic. Write Q99 Software at 1884 Columbia Road, #1021, Washington, DC 20009-5161 or call (202)667-3574. Don't forget to mention DVUG/The Data Bus.

It's easy when working in BASIC, as default output to PRINT to the screen is to device #0.

If you define where you want your output (is #A a 1 or 0?), then you PRINT #A:text to whichever medium you've indicated. If you want to go back to your printer after you've used the screen, do a GOTO where A is redefined as 1, then return to the start of the PRINT #A routine, whereas this time PRINT #1 will drive the printer. That was the technique used in this month's LOAD program.

ANNUAL TRENTON COMPUTER FAIR NEXT MONTH

WHAT'S IN A NAME? THE POWER TO COMMAND ...

Barry Traver's GENIAL TRAVELER, Volume 1:5, included a Multiplan tax form, named MP86FM1040. It wouldn't load under that name for me, but if I changed the name to 1040FORM, it worked fine. That shouldn't matter, but I wasn't the only one who had that happen. Anyone know why?

TICOFF is March 28 but if you can't make it to that all-II event yet want an excellent slice of what a computerfest should be, don't miss the annual 2-day Trenton State College event on both Saturday and Sunday, April 11th (9-6) and 12th (10-4), for good equipment buys and seminars. On Route 31 in New Jersey, off I-95/295. Call (609) 771-2487 for info. Most of the II activity will probably be at TICOFF 2 weeks earlier, however.

DM 1000 VERSION 3.5 IN DVUG LIBRARY

SOURCES FOR SOFTWARE/HARDWARE INFORMATION

Reference to The Computer Shopper brings me a reminder to tell Delaware DVUG members that it can be found monthly at the Encore Book shop, in the Silverdale Road (Show Biz Pizza) Plaza, off Concord Pike. The store also carries the Tenex II-99/4A and Commodore catalog versions of their "Everything" book. Encore's number is (302)478-5452, at that Talleyville Plaza off Route 202.

Those members who don't access their TIBBS should be aware that the latest version of Disk Manager 1000, the superb XB/32K disk program, is available, having corrected a problem with index Sector 0, and with a new feature to print to PIO output your DF or DV/80 files. Using the File utilities, type T to display the file on screen, or P to go to printer. We still have the old DV 80 help files in the Library from U. 3.1, which explain how to use DM1000, if you want them.

UPDATE ON DVUG MEMBERSHIP BY LOCATION

ON LINE WITH UNIVERSITY PLATO SERIES

A Beta version of a never-released II-99/4A interface program for PLATO learning services of the University of Delaware computer has been unearthed and brought together by some ambitious DVUG TIBBS Committee members. John Kelley has graciously added a *README* explanatory word or two, and the whole package is on a SS/SD disk in the DVUG Library. Use with 1200 Baud modem and XB or E/A with 32K memory to access UDel's Home Net subscriber service; PLATO module NOT needed.

Concluding our first year of DVUG in 1983, 87 of 104 member households were Delawareans. In 1985, that began to shift with Jersey support up to 37 families by November, or 31% of DVUG. Now they include 52 households, with 3/8 of our DVUG membership. Delaware has 67 households, with 6 in Maryland, and 7 in Pennsylvania on our active rolls. We're in our 5th year.

The normal screen is 32 lines/64 characters although scrolling is possible. DVUG has a few copies of the 12-ounce document describing the ASCII PLATO host/terminal interface protocol; we have copies of function/control key overlays and a PLATO key character map, which you can print yourself using the PRINTSTRIP program included on the disk (using Epson/Gemini printers).

When it comes to attending meetings, 53% go to Christiansa, 36% to Deptford, and close to 12% attend the Dover sessions, among 136 households.

The DelMarVa, or Dover, group is starting a series of learning classes in II BASIC, planned for Monday evenings at alternating households in lower Delaware. Call C. Bowers for information at (302)653-6573. Tell your officers if you want classes in either Christiansa or Deptford. Due to TICOFF, no March weekend workshop was scheduled.

USING THE CRU LINES TO READ THE KEYBOARD AND
JOYSTICK PINS
by Emile Talbot

In assembly language, FORTH, or c99 the CRU lines can be used to directly read the keyboard or the joystick pins. This can be particularly useful if you want to interface the II to a numeric keypad such as are available for the VIC-20, CG4, and the Atari home computers. Of course, even if you can read such a numeric keypad, II-WRITER and other editors would have to be modified if you wanted to use the numeric keypad with these editors. Not a simple job! In any case, this article will not address that problem but will restrict itself to giving you the information that you would need to write an assembly language, FORTH, or c99 program to read the keyboard or joystick pins.

To understand the way the keyboard is scanned, one needs to understand the way the TMS9901 programmable systems interface chip works. This chip forms the major part of the interface between the CPU and the keyboard and joystick port.

As is mentioned on pages 408-9 of the ED/ASM manual, the TMS9901 handles 32 CRU lines: 1 to control the 9901 chip (which can also act as a real-time clock), 15 interrupt lines, and 16 I/O lines. However, in any particular application of the 9901, not all 32 CRU lines can be used because interrupts 7 to 15 use the same IC pins as the I/O lines 15 to 7. If a pin is connected to some device in order to act as an interrupt, it cannot usually be used as an I/O pin also. This explains the rather confusing information found on pages 408-9 of the ED/ASM manual. In the II-99/4A, the 9901 is wired such that the CRU lines 1 to 10 are interrupts (provide input to the CPU such as the status of the keyboard or joysticks) and lines 18-27 act as I/O lines.

You should be careful when writing to any CRU line as the 9901 chip can actually be DAMAGED by trying to write to a CRU I/O line that is wired as an input line. To read the keyboard or the joysticks we use only the CRU lines 3 to 10 and lines 18 to 21. These lines are safe to write to. Lines 18 to 20 are select bits which are used to scan a particular set of keys or a joystick while lines 3 to 10 reflect the status of each of these keys or the pins on the joystick port.

Fig. 1 is a schematic of the keyboard showing which keys trigger which interrupt. The horizontal lines 1Y0, 1Y1, 2Y0, ..., 2Y3 are the select lines chosen by the select bits (CRU lines 18 to 20). The relation between these select lines and the select bits is shown in Table 1. The interrupts 3 to 10 correspond to the vertical lines on the schematic. When a particular select line is chosen, interrupts 3 to 10 reflect the status of all the keys along that row.

As you can see from the keyboard schematic, the ALPHA LOCK key is not part of the regular matrix of keys (in my opinion, this is a defect in the design of the keyboard). This means that when the ALPHA LOCK key is down, INT7 (CRU line 7) is always on (low or 0) no matter what select code is chosen or whether or not a key is being pressed. If the select bits and the interrupts were the whole story, this would mean that we could not detect the keys 1, 2, 3, 4, 5, or FCIN whenever ALPHA LOCK is down. To get around this problem, CRU line 21 (PS) can be used to "trick" the keyboard into ignoring the ALPHA LOCK key.

(I thought that select lines were strobed. If that is so, then I could envision PS as just another select line that reports ALPHA LOCK status on INT7. This is easier for me to deal with if true. Ed)

For some reason setting CRU line 21 to 1 does not work when reading the joysticks. If ALPHA LOCK is down, INT7 is always 0 if CRU bit 21 is 0 and INT7 is always 1 if CRU bit 21 is 1 independent of the joystick position. When reading a joystick, INT7 corresponds to joystick up (see Table 2). It follows that the up arrow on the joystick cannot be detected when ALPHA LOCK is down.

(IF PS is a select line and it obscures the UP joystick positions, then perhaps PS is strobed while Joystick 1 and Joystick 2 are strobed. This would cause the microprocessor to be unsure which select line is associated with the INT7 interrupt signal. The microprocessor must default to some condition (eg. if no interrupt, then ALPHA LOCK is up and Joystick is UP but if interrupt, then ALPHA LOCK is down and Joystick is centered). At least, that is the way I would do it. Ed)

There are several confusing or, at least, non-obvious aspects to using the TMS9901 to directly read the interrupts. First of all, writing to an interrupt line either enables (or disables) the 9901 to recognize that interrupt. What is important here is that the interrupt lines are INVERTED. In other words, an interrupt is on when it is LOW (0). To enable the 9901 to recognize interrupts INT3 to INT10, we have to write 0 to the CRU lines 3 to 10.

Secondly, when scanning the keyboard, CRU line 21 must be set to 1 in order that INT7 can be used. Detection of a keypress will occur when the interrupt for that key becomes 0 (on) when probing with the proper select line.

(This takes care of itself if PS is just another select line. Ed)

For example, to detect that "K" is being pressed, we need to probe the keyboard with select line 2Y2 and look at INT4. From Table 1, we see that we need to use select code 2 or 10 (CRU line 21 should usually be set to 1 but it is actually irrelevant when we are not concerned with INT7). INT4 (CRU line 4) will then be 0 if "K" is being pressed and it will be 1 if "K" is not being pressed.

When reading the joysticks, the status of CRU line 21 is irrelevant unless ALPHA LOCK is down. This can in fact be used to read the ALPHA LOCK key in the following way:

- 1) set CRU lines 18 to 20 according to select code 6 or 7,
- 2) set CRU line 21 to 0 and read INT7 calling its value A,
- 3) set CRU line 21 to 1 and read INT7 calling its new value B,
- 4) if A=B then ALPHA LOCK is up, else ALPHA LOCK is down.

Continued On Page 5

Continued From Page 4

Note that as CRU bits can be set sequentially using the LDCR instruction, it is easy to set the CRU bit 21 at the same time as we choose a select code for CRU bits 18 to 20. Similarly, one can read all eight of the interrupts 3 to 10 using one STCR instruction.

I figured out this information by combining information from a variety of sources: the ED/ASM manual listing of the CRU bits 0 to 31 on pages 408-9, information on the TMS9901 chip, a disassembly of the keyboard scan routine at >02B2 in the console ROM, the keyboard schematic, and finally, but certainly not least, a short FORTH program that tests the CRU lines. For completeness, this is a copy of that short FORTH program (translated to TI-FORTH from Wycove FORTH):

```

-SYNONYMS -CRU ( Load CLS and CRU support )
3 CONSTANT INT-A ( INTERRUPT Address )
8 CONSTANT INT-C ( INTERRUPT Count )
18 CONSTANT SEL-A ( SELECT Address )
4 CONSTANT SEL-C ( SELECT Count )
3 VARIABLE RUN-TIME
: INIT ( Select-code --- )
  SEL-C SEL-A LDCR
  0 INT-C INT-A LDCR
  -31806 C@ 16 OR -31806 C! ;
: .TITLE CLS
  CR ." CRU bit 3 4 5 6 7 8 9 A" CR ;
: DISPLAY ( N --- ) INT-C 0 DO
  DUP 1 AND 48 + EMIT SPACE 2 /
  LOOP DROP ;
: READ-CRU 10 SPACES
  INT-C INT-A STCR DISPLAY
  0 23 GOTOXY ;
: RUN ( Select-code --- )
  INIT .TITLE RUN-TIME @ 0 DO
  500 0 DO READ-CRU LOOP
  LOOP ;

```

The word INIT sends the select code to the CRU bits 18-21, enables the interrupts, and disables the QUIT key. The word DISPLAY simply displays the last 8 bits of the number on the top of the stack in reverse order. The variable RUN-TIME determines how long the program runs. To use the program to test the select code n, simply type "n RUN" without the quotes. The program then sets the select code and repeatedly reads the CRU bits 3 to 10 displaying their values under the title printed by .TITLE.

I hope that you will find this information useful. If you decide to interface a numeric keypad to the joystick pad, the above FORTH program should help you out. I myself am designing an editor and I will buy one of those cheap numeric keypads to use as separate cursor keys. Maybe I'll even write that editor some day. Who knows?

For Fig 1 - See
Page 6

Table 1 : Relation between the CRU lines 18-20 and the keyboard select lines

Select Code	CRU lines			Select line
	21	20	19 18	
0	0	0	0 0	2Y0
1	0	0	0 1	2Y1
2	0	0	1 0	2Y2
3	0	0	1 1	2Y3
4	0	1	0 0	1Y0
5	0	1	0 1	1Y1
6	0	1	1 0	Joystick 1
7	0	1	1 1	Joystick 2
8	1	0	0 0	Note A
to 13	to 1	1	0 1	
14	1	1	1 0	Note B
15	1	1	1 1	

Note A: Select codes 8-13 choose the same select lines as codes 0-5 except that INT7 is now always useful independent of the status of the ALPHA LOCK key.

Note B: Select codes 14 and 15 are the same as codes 6 and 7 except when ALPHA LOCK is down, in which case INT7 is now always 1 instead of being always 0 independent of the joystick status.

Table 2 : Interrupts used when reading the joystick port

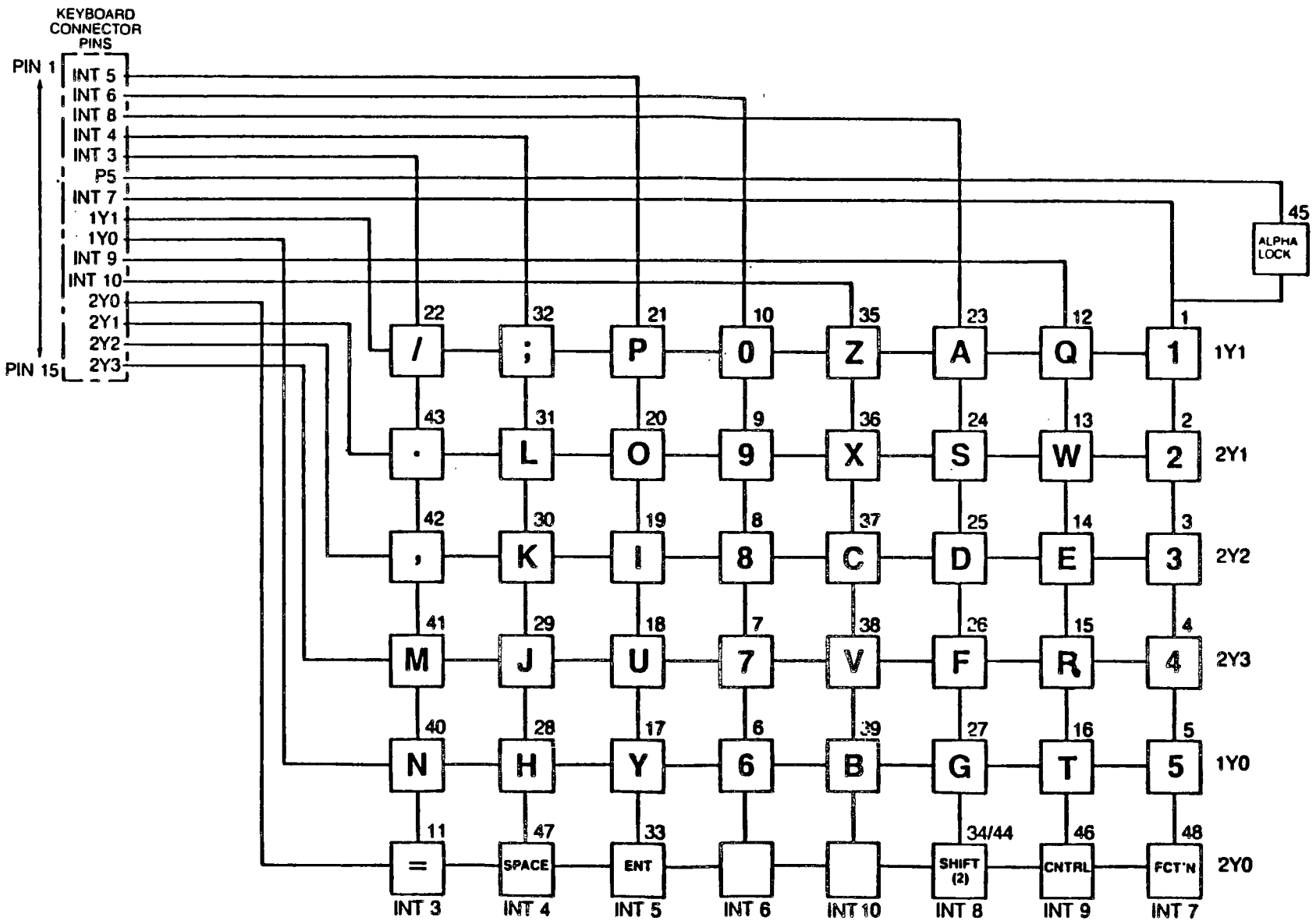
CRU line or Interrupt	Function
3	Joystick fire button
4	Joystick left
5	Joystick right
6	Joystick down
7	Joystick up

Tibbs
by The Bulletin Board Committee

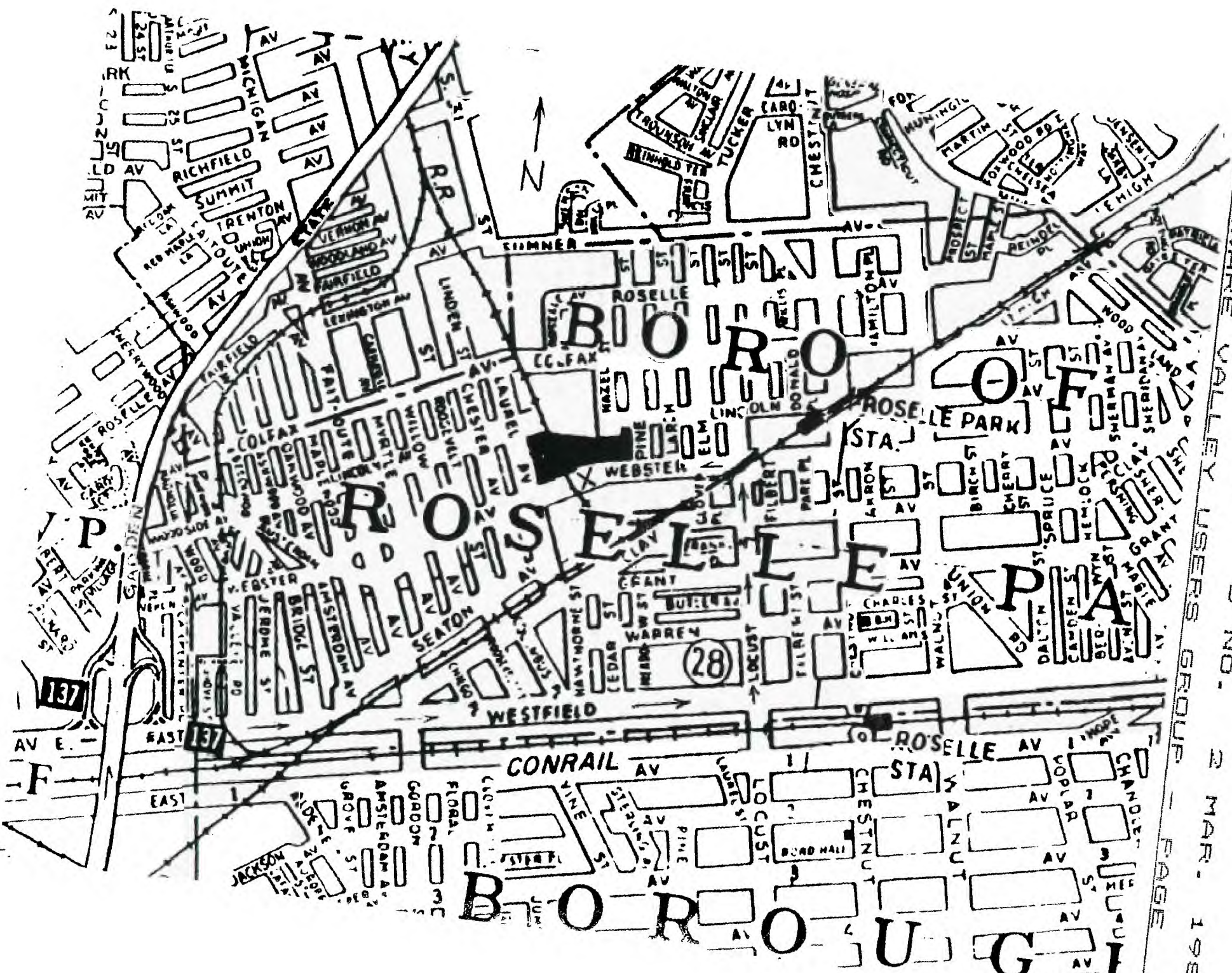
Those of you that have not been using our Bulletin Boards have been missing out on a lot of good programs. The DVUG supports 3 Bulletin Boards.

The oldest one is in New Castle and can be reached by calling (302)322-3999 any time day or night. The New Castle Board has an expanded message base allowing 24 lines of text rather than the normal 12. If New Castle is too far, try the Jersey Board at (609)429-7792. Both New Castle and Jersey operate at 1200 baud. If your down state in Delaware, try the Dover board at (302)674-1449 operating at 300 baud. The boards are designed to help the TI user and be a good source of programs and tips.

Since start up of the New Castle board, we have received 20400 calls and over 6000 messages. Most programs available for download are ARCHIVED to help you save time and to make sure you don't miss any part of a program. We welcome your uploads to be shared with other users. If you have missed a program or are looking for a special one leave a message on signoff and we will try to have it in the downloads in the very near future.



KEYBOARD SCHEMATIC



THE DATA BUS VOL. 5 NO. 2 MAR. 1988
DELAWARE VALLEY USERS GROUP PAGE

PAGE 8 - DELAWARE VALLEY USERS GROUP

Burglar Alarm
by Rick Lumsden

The program listed allows you to use your spare TI console as a burglar alarm with very little investment except for a bit of time.

The actual program is very simple and can be modified to suit your own particular needs. This particular version has a lot of statements that allow you to see what is going on in the program while running a demonstration, however, they can be removed quite easily with no effect on the operation of the program. Just a few cautions, though. Understand the program first before making any drastic changes. The other precaution is not to use your perimeter loop on the same joystick "direction" as the entry keyswitch (eg. If you use the UP position for the keyswitch, do not use this direction for the perimeter loop even if it is opposite joysticks). The program is set to use the UP position of joystick 2 for the entry keyswitch and the DOWN position of joystick 1 for the perimeter loop. It is also possible to use the other joystick directions (with appropriate program mods) to have more than one loop. Remember, this program will run as a standalone routine but is intended to be modified or totally rewritten by yourself to suit your particular job. The intention of this program was to be as simple as possible and not require any peripherals or modules. Most of us have a second console so here is a good use for it other than a paper weight.

To set up the alarm you will need the following:

1. TI console
2. Normally open magnetic or pushbutton switches for each door on the perimeter loop (Radio Shack #49-495 or #49-497). With changes to the program (using the fire buttons and other positions), you may add other protection loops but you must insure that you have one switch per loop when using the normally closed switches. You may use as many switches of the normally open version on the loop as you wish.
3. Entry keyswitch (Radio Shack #49-515) or a hidden SPST toggle switch.
4. An audio amplifier and speaker(s) (Your stereo amplifier will work just fine but the alarm will only be sounded in the house.)
5. A cable to hook the audio out port from the console to the amp. (If you have a monitor cable, these will work fine. Some are available for the TI from Super Valu stores for \$10.95).
6. Joystick connector (Radio Shack #276-1538)
7. Hook-up wire

To run a simple demonstration of the program you will need two joysticks and your TV or monitor.

First, you may want to set the delay variables in lines 150 and 160. Line 150 is the exit delay variable. This allows you time to leave the house after you turn on the keyswitch. If you mount the keyswitch outdoors, then set this variable to 1.

The variable in line 160 sets the entry delay. This one allows you time to enter your home and disarm the system with the keyswitch before the alarm sounds. Remember to set this one on the fast side because it also delays in the event of a break-in.

When you type RUN, the words "PLEASE REMOVE ALPHA LOCK" and "PRESS 'C' TO CONTINUE" appear. Follow the instructions and next comes "PERIMETER CHECK (Y/N)?". If you press "Y", the

program jumps to line 700 and checks Joystick 1 for any openings in the protection loop. If an opening is found (such as J1 in the center position), the program sounds a warning and tells you to check and remedy the situation. Do this by moving J1 to the down position and holding it there. Now push the "R" key and the program goes back to line 310 and sounds the OK chime.

The word "UNARMED" appears and tells you that the system is now ready for

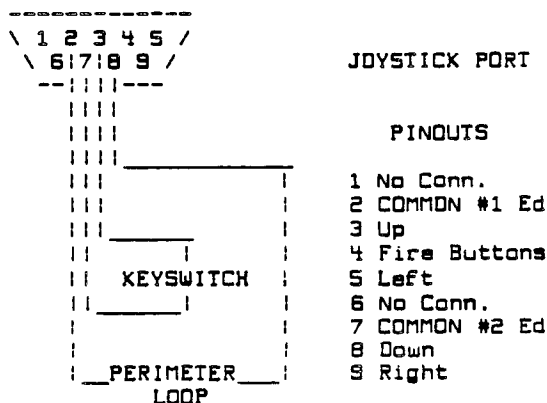
(arming. The system is armed by closing the keyswitch. When the system is armed (Simulate with J2 in the Ed)

UP position and J1 in the DOWN position), the program goes to the exit delay loop. This loop allows you to leave your home without triggering the system. Once this times out the program begins looping and checking each of the joysticks for a change in state.

If J1 suddenly becomes open, the program moves to the entry delay loop. This delay allows you to enter your home and disarm the system with the keyswitch without setting it off. If the timer times out (eg. break-in), the program now sounds the alarm. You can simulate this by letting J1 return to the center position. Even if you were to close the door now, it is too late. The timer is running down and the only way to stop it is to disarm the system.

Any number of changes and additions can be made to the program limited only by your imagination and your requirements. The intention of this routine was to give you an idea of what is possible and also to be as simple as possible. There are also heat detectors available that work on the normally open and normally closed principles so a fire alarm can also be added.

Try it out and if you have any questions, see me at the next meeting or call me at 253-0794. If you have any ideas on how to improve the program, I would be interested to hear from you also.



Rick Lumsden
18 Corton Place
Winnipeg, Manitoba
Canada R2N 1W6

PROGRAM LISTING

```

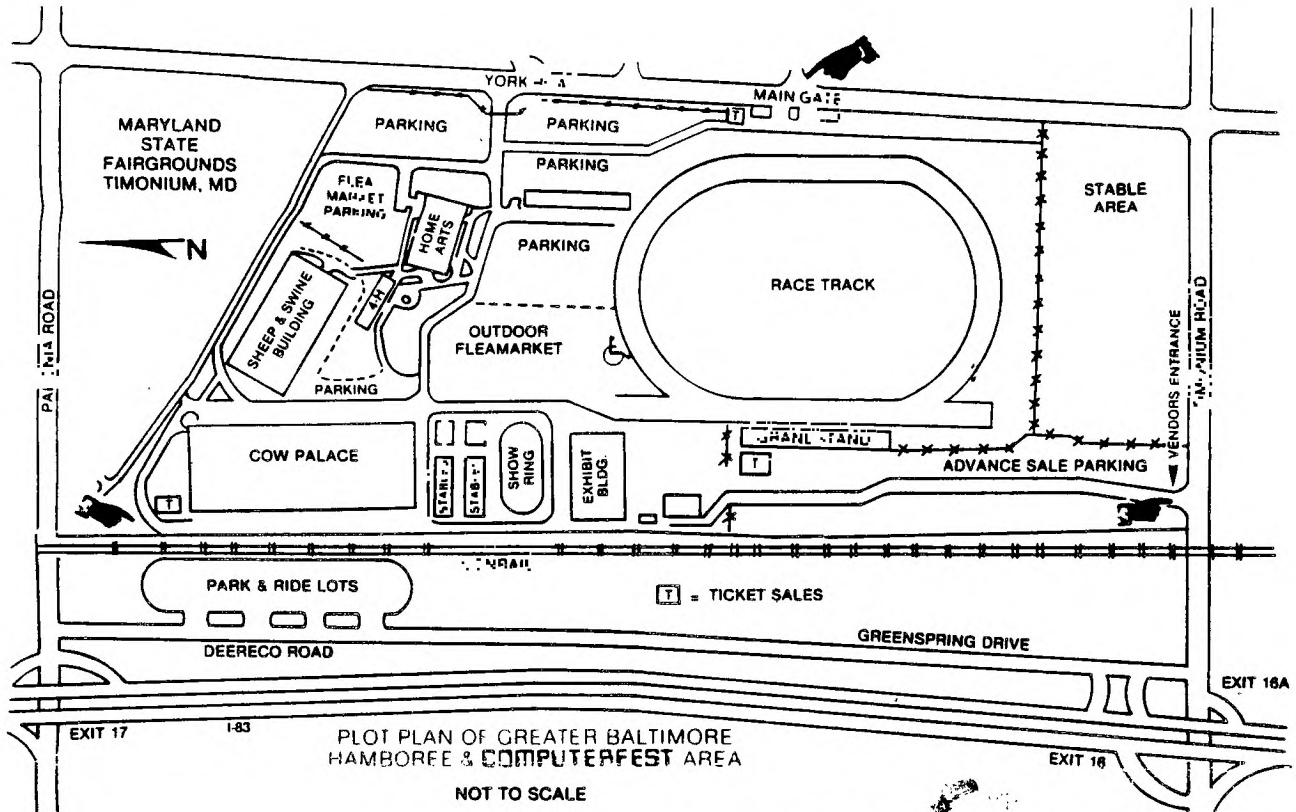
100 REM BURGLAR ALARM PROGRA
M
110 REM FOR THE II HOME COMP
UTER
120 REM A PUBLIC DOMAIN PROG
RAM
130 REM WRITTEN BY R.A.LUMSD
EN- WINNIPEG, MANITOBA, CANADA
140 REM 85/11 HUG-TIBBS
150 ENDEL=1000
160 EXDEL=1000
170 SKIPD=1
180 CALL CLEAR
190 PRINT "PLEASE REMOVE ALP
HA LOCK"
200 PRINT
210 PRINT
220 PRINT "PRESS 'C' TO CON
TINUE"
230 CALL KEY(3,M,N)
240 IF N=0 THEN 230
250 IF M<>67 THEN 230
260 CALL CLEAR
270 PRINT "PERIMETER CHECK (
Y/N)?"
280 CALL KEY(3,L,I)
290 IF I=0 THEN 280
300 IF L=89 THEN 730
310 IF L<>78 THEN 280
320 CALL SOUND(1000,440,0,33
0,5)
330 CALL CLEAR
340 PRINT "UNARMED"
350 CALL JOYST(2,X,Y)
360 IF Y<>4 THEN 350
370 IF SKIPD>1 THEN 400
380 GOSUB 660
390 SKIPD=SKIPD+1
400 CALL JOYST(1,A,B)
410 IF B=-4 THEN 350
420 CALL CLEAR
430 PRINT "ALARM TRIPPED"
440 PRINT
450 PRINT "ENTRY DELAY INITI
ATED"
460 FOR ENTRDEL=1 TO ENDEL
470 NEXT ENTRDEL
480 CALL JOYST(2,X,Y)
490 IF Y=0 THEN 330
500 FOR LOOP=1 TO 5
510 FOR SIREN=700 TO 900 STE
P 10
520 CALL SOUND(-99,SIREN,0)
530 NEXT SIREN
540 FOR SIREN=900 TO 700 STE
P -12
550 CALL SOUND(-99,SIREN,0)
560 NEXT SIREN
570 NEXT LOOP
580 CALL CLEAR
590 PRINT "ALERT !!!!!!"
600 PRINT
610 PRINT
620 PRINT "ALARM TRIPPED"
630 PRINT
640 PRINT "PLEASE RESET"
650 END
660 CALL CLEAR
670 PRINT "EXIT DELAY INITIA
TED"
680 FOR DELAY=1 TO EXDEL
690 NEXT DELAY
700 CALL CLEAR
710 PRINT "ARMED"
    
```

```

720 RETURN
730 CALL CLEAR
740 CALL JOYST(1,A,B)
750 IF B=-4 THEN 320
760 CALL SOUND(1000,-2,0)
770 PRINT "BREAK IN PERIMETE
R CIRCUIT"
780 PRINT
790 PRINT "PLEASE CHECK"
800 PRINT
810 PRINT "PRESS 'R' TO REC
HECK/////////PERIMETER"
820 CALL KEY(3,K,S)
830 IF S=0 THEN 820
840 IF K=82 THEN 730
850 IF K<>82 THEN 820
    
```

MEETING DATE
MARCH 26

1987																
JANUARY							FEBRUARY									
S	M	T	W	T	F	S	S	M	T	W	T	F	S			
				1	2	3	1	2	3	4	5	6	7			
4	5	6	7	8	9	10	8	9	10	11	12	13	14			
11	12	13	14	15	16	17	15	16	17	18	19	20	21			
18	19	20	21	22	23	24	22	23	24	25	26	27	28			
28	29	30	31													
MARCH							APRIL									
S	M	T	W	T	F	S	S	M	T	W	T	F	S			
1	2	3	4	5	6	7				1	2	3	4			
8	9	10	11	12	13	14	5	6	7	8	9	10	11			
15	16	17	18	19	20	21	12	13	14	15	16	17	18			
22	23	24	25	26	27	28	19	20	21	22	23	24	25			
29	30	31					26	27	28	29	30					
MAY							JUNE									
S	M	T	W	T	F	S	S	M	T	W	T	F	S			
					1	2			1	2	3	4	5	6		
3	4	5	6	7	8	9	7	8	9	10	11	12	13			
10	11	12	13	14	15	16	14	15	16	17	18	19	20			
17	18	19	20	21	22	23	21	22	23	24	25	26	27			
24	25	26	27	28	29	30	28	29	30							
31																
JULY							AUGUST									
S	M	T	W	T	F	S	S	M	T	W	T	F	S			
				1	2	3	4							1		
5	6	7	8	9	10	11	2	3	4	5	6	7	8			
12	13	14	15	16	17	18	9	10	11	12	13	14	15			
19	20	21	22	23	24	25	16	17	18	19	20	21	22			
26	27	28	29	30	31		23	24	25	26	27	28	29			
							30	31								
SEPTEMBER							OCTOBER									
S	M	T	W	T	F	S	S	M	T	W	T	F	S			
				1	2	3	4	5						1	2	3
6	7	8	9	10	11	12	4	5	6	7	8	9	10			
13	14	15	16	17	18	19	11	12	13	14	15	16	17			
20	21	22	23	24	25	26	18	19	20	21	22	23	24			
27	28	29	30				25	26	27	28	29	30	31			
NOVEMBER							DECEMBER									
S	M	T	W	T	F	S	S	M	T	W	T	F	S			
1	2	3	4	5	6	7				1	2	3	4	5		
8	9	10	11	12	13	14	6	7	8	9	10	11	12			
15	16	17	18	19	20	21	13	14	15	16	17	18	19			
22	23	24	25	26	27	28	20	21	22	23	24	25	26			
29	30						27	28	29	30	31					



This brochure prepared by Meg Kerr Typography/Line Art.

DELAWARE VALLEY USERS' GROUP
 P. O. BOX 6240
 STANTON BRANCH
 WILMINGTON, DE 19804

Subscription expires with date on label

TO:

0000 EDMONTON 99'ER ONLINE
 P.O. BOX 11983
 EDMONTON ALB. CANADA T5J 3L1

FIRST CLASS MAIL