PERKINS ENGINEERING

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~~MAY~~ JUNE 8, 1983

DEAR BOB:

HERE IS SOMETHING YOU DIDN'T SEE IN CHICAGO. KEN.LILL'S 4 PART (ABOUT 62K BYTES) INSTRUCTIONS AND JOHN'S FINAL VERSION (2.3) OF THE UTILITY WITH BURN, DISASSEMBLE, SEND, RECEIVE ETC. THERE ARE ALSO 5 CLEVER LITTLE PROGRAMS BY 12 YEAR OLD JAY KOTTLER--A RECENT BLUE RAMMER.

   HOPE THE SHOW WAS FUN AND INTERESTING, NOT JUST TIRING.

SINCERELY,

Clyde

CLYDE

STOP TAPE!

     YOUR 8K BLUE RAM UTILITY PROGRAM CONTAINS A VARIETY OF ROUTINES WHICH
ARE MOST USEFUL IN WRITING OR ALTERINGMACHINE LANGUAGE PROGRAMS SUCH AS GAME
CARTRIDGES. MACHINE LANGUAGE PROGRAMSRUN MUCH FASTER THAN PROGRAMS WRITTEN
IN BASIC, ALLOWING SMOOTH ANIMATION. TO GAIN THE MOST FROM THIS TAPE, SOME
FAMILIARITY WITH MACHINE LANGUAGE IN HEXIDECIMAL NOTATION IS NECESSARY.
THE FOLLOWING BOOKS WILL BE HELPFUL INBECOMING FAMILIAR WITH Z80 PROGRAMMING
AND PECULIARITIES OF YOUR ASTROCADE:

Z80 INSTRUCTION HANDBOOK OR Z80 SOFT-
   WARE GOURMET GUIDE & COOKBOOK BY NAT   WADSWORTH (SCELBI PUBLICATIONS).
PROGRAMMING THE Z80 BY RODNEY ZAK CAN   BE FOUND AT MOST RADIO SHACK STORES.
DNA/BALLY HARDWARE/SOFTWARE MANUAL AND   VARIOUS PROGRAM DISASSEMBLY LISTINGS
   ARE AVAILABLE THROUGH THE ARCADIAN.
          OPERATION OF THE BLUE RAM UTILITYIS CONTROLLED BY 4 LETTER WORDS KNOWN
AS COMMANDS. COMMANDS MAY BE ENTERED USING THE KEYBOARD OR KEYPAD WHENEVER
THE ">" SYMBOL IS DISPLAYED ALONG WITHAN "ENTER COMMAND" PROMPT. IT IS ONLY
NECESSARY TO ENTER ENOUGH LETTERS TO UNIQUELY IDENTIFY THE COMMAND. UPON
RECOGNIZING THE COMMAND, THE UTILITY WILL COMPLETE THE SPELLING AND PROMPT
FOR ADDITIONAL PARAMETERS AS NECESSARYTO QUANTIFY AND QUALIFY THE COMMAND.
          AS EACH PARAMETER IS SOLICITED, ADEFAULT VALUE IS PROVIDED. ANY OR ALL
OF THE DEFAULT VALUE CHARACTERS MAY BECHANGED BY SIMPLY WRITING OVER THEM.
PRESSING [RETURN(GO)] OR [TAB] ACCEPTSTHE PARAMETER AS DISPLAYED WHETHER OR
NOT IT HAS BEEN MODIFIED. THE [SPACE]OR a KEY MAY BE USED TO SKIP OVER (NOT
CHANGE) A PARAMETER CHARACTER. PRESS [DELETE(ERASE)] OR [BACKSPACE] TO BACK
UP TO A PRIOR CHARACTER OR A PREVIOUS PARAMETER, OR TO ABORT THE COMMAND.
          MOST PARAMETERS ARE HEXIDECIMAL NUMBERS REPRESENTING BYTE ADDRESSES OR
BLOCK BOUNDARY ADDRESSES. BLOCK SIZE IS NORMALLY DEFINED DECIMALLY IN KILO-
BYTES (K), WHERE K=1024 BYTES, 2K=2048BYTES, ETC., UP TO A MAXIMUM OF 32K.
ALTERNATIVELY, PRESSING THE E KEY WILLALLOW THE ENTRY OF A BLOCK END ADDRESS
WHICH IS REQUIRED FOR A BLOCK SIZE OF OTHER THAN A KILOBYTE MULTIPLE. EACH
PARAMETER IS DESCRIBED BY ITS PROMPT. PROPER FORMAT IS SHOWN BY THE DEFAULT.
          THE BLUE RAM UTILITY RESPONDS TO THE FOLLOWING COMMANDS:

COPY - COPIES AN ARCADE CARTRIDGE AS ABLOCK OF DATA INTO THE BLUE RAM. THIS
IS NORMALLY THE FIRST STEP IN SEQUENCEFOR ANALYZING AND/OR MODIFYING A GAME
CARTRIDGE FOR EXPERIMENTAL USE. OTHERCOMMANDS IN THIS SEQUENCE MAY INCLUDE
LIST, EDIT, SAVE, AND TEST. THE COPY COMMAND IS NOT INTENDED AS A VEHICLE
FOR DISTRIBUTION OF COPYRIGHTED GAMES.
SAVE - SAVES A BLOCK OF DATA ON TAPE. (SIMILAR TO :PRINT WITH SIZE IN BYTES)

LOAD - LOADS A DATA BLOCK FROM TAPE. (SIMILAR TO :INPUT)

VRFY - VERIFIES A DATA BLOCK ON TAPE. (SIMILAR TO :LIST)

DIAG - VERIFIES THE SIZE OF YOUR BLUE RAM AND TESTS ALL MEMORY COMPONENTS IN
THE BLUE RAM FOR PROPER OPERATION.
TEST - MOVES A MACHINE LANGUAGE BLOCK TO THE 6K ADDRESS SPACE FOR OPERATION
AS A CARTRIDGE WITH THE RANGE SWITCH IN THE 2K POSITION. EXECUTION OF THIS
COMMAND OVERLAYS THE UTILITY PROGRAM, REQUIRING A RELOAD FOR FURTHER USE.

DUMP - MAKES A FRESH COPY OF THE BLUE RAM UTILITY ON TAPE. FOR PROPER COPY,
THIS SHOULD BE THE FIRST COMMAND AFTERA FRESH UTILITY LOAD, ANSWERING YES TO
THE PROMPT FOR INSTRUCTIONS.
UNPK - CHANGES AN ASTRO-BASIC FORMAT BLOCK INTO A BLUE RAM BASIC COMPATIBLE
FORMAT, SAVING THE ASTRO SCREEN IMAGE AS A BLUE RAM BASIC COMPATIBLE "SNAP".
THE ASTRO PROGRAM IS FIRST LOADED INTOTHE BLUE RAM USING THE LOAD COMMAND.
THE UNPK COMMAND TRANSFORMS THE ASTRO PROGRAM AREA INTO A BLUE RAM PROGRAM
AREA (0D08 HEX BYTES LONG) AND SCREEN IMAGE (0DC4 HEX BYTES LONG) LOCATED
1000 HEX BYTES HIGHER IN MEMORY. USE SAVE TO SAVE THESE BLOCKS ON TAPE.

AN EXAMPLE OF UNPK FOLLOWS: LOAD TO 8000 (LOAD ASTRO FORMAT TAPE)
UNPK FROM 8000 (CONVERT TO BR FORMAT) SAVE FROM 8000 THRU 8D07 (SAVE BR PGM)
SAVE FROM 9000 THRU 9DC3 (SAVE SCREEN)THE RESULTING TAPE MAY THEN BE LOADED
VIA BLUE RAM BASIC (AFTER RESET) USINGTHE STATEMENT :INPUT :;INPUT %(!7000).
THE UNPK COMMAND DOES NOT ALTER ANY OFTHE ORIGINAL PROGRAM STATEMENTS TO USE
THE NEW BLUE RAM BASIC FEATURES. USE SHOW 0,8,0,%(!7000) TO SEE THE SCREEN.
DASM - DISASSEMBLES A MACHINE LANGUAGEPROGRAM (HEX) TO ITS ASSEMBLY LANGUAGE
EQUIVALENT.   THE LISTING IS PRESENTED ON THE SCREEN (AND PRINTER IF ON-LINE)
IN INDIVIDUAL PAGES.   BY RESPONDING TOTHE (ACK) PROMPT WITH [DELETE], AN END
OF DASM OCCURS.   BY PRESSING ANY OTHERKEY, ANOTHER PAGE IS DISASSEMBLED.

BURN - BURNS A 2732/2764 EPROM WITH ANOPTIONAL BLUE RAM EPROM BURNER. THERE
ARE ADDITIONAL INSTRUCTIONS WITH IT.
THE TAPE SWITCH MUST BE SET TO SAVE!
EACH TIME THE MOUNT EPROM (ACK) PROMPTIS DISPLAYED THERE ARE 4 RESPONSES YOU
MAY MAKE. PRESSING THE [DELETE] KEY   TERMINATES THE BUBN COMMAND. PRESSING
V VERIFIES THAT THE EPROM IS ERASED.   PRESSING C COMPARES THE EPROM AGAINST
MEMORY FOR IDENTIFICATION. PRESSING   ANY OTHER KEY STARTS THE BURN PROCESS.
SEND - SENDS A BLOCK OF DATA OVER THE TELEPHONE TO ANOTHER BLUE RAM (VIA AN
OPTIONAL MODEM INTERFACE AND MODEM).

RECV - RECEIVES A BLOCK OF DATA SENT   OVER THE TELEPHONE FROM ANOTHER BLUE
RAM (VIA AN OPTIONAL MODEM INTERFACE   AND MODEM).

THESE TWO COMMANDS TRANSFER PROGRAMS   OR OTHER DATA BETWEEN BLUE RAMS.   THE
FIRST STEP IS TO CALL THE OTHER PARTY.
SET YOUR MODEM TO ORIGINATE FREQUENCY AND FULL DUPLEX MODE.   THE OTHER PARTY
SHOULD USE ANSWER FREQUENCY AND FULL   DUPLEX MODE. COMMUNICATIONS ARE READY
WHEN THE CARRIER DETECT (CD) LIGHT IS LIT ON YOUR MODEMS.   ONCE THIS HAPPENS
SET TAPE SWITCH TO SAVE AND EXECUTE   THE SEND AND RECV COMMANDS.   THE PARTY
RECEIVING DATA MUST EXECUTE THE RECV   COMMAND PRIOR TO EXECUTION OF THE SEND
COMMAND BY THE OTHER PARTY.
LIST - LISTS A BLOCK OF MEMORY TO THE PRINTER (VIA THE BR PRINTER INTERFACE)
IN BOTH HEX AND ASCII FORMATS.

DISP - ALLOWS THE DEFAULT DISPLAY BASE (BLOCK BEGIN) ADDRESS TO BE CHANGED.

BASE - ALLOWS THE INTERNAL MEMORY BASEASSOCIATED WITH THE DISPLAY BASE (ALSO
NORMALLY 8000) TO BE CHANGED. VALUES FOR DISP AND BASE NEED NOT BE THE SAME
(A PSEUDO-MEMORY-MAPPING CAPABILITY).
EDIT - DISPLAYS A BLOCK (OF 208 BYTES)AND ALLOWS IT TO BE EDITED ANYWHERE ON
THE SCREEN. [RETURN(GO)], [TAB], a, AND [SPACE] MOVE THE CURSOR RIGHT.   _
AND [DELETE(ERASE)] MOVE IT LEFT. USE ^ TO MOVE THE CURSOR UP AND ` TO MOVE
IT DOWN (GOING BELOW THE BOTTOM BRINGSUP ANOTHER DISPLAY LINE).   USE GOTO TO
LOCATE A PARTICULAR ADDRESS ON OR OFF THE DISPLAY (SEE GOTO COMMAND).   USE
PAGE TO FLIP FORWARD OR BACKWARD ONE DISPLAY PAGE FOR EDITING CONVENIENCE.
THE > KEY MAY BE USED TO EXIT THE EDITMODE TO ALLOW ENTRY OF OTHER COMMANDS.

GOTO - LOCATES A SPECIFIED MEMORY BYTEAND ALLOWS EDITING OF THAT OR ADJACENT
BYTES. IF THE SPECIFIED BYTE ISN'T INTHE CURRENT DISPLAY, A LINE CONTAINING
THAT BYTE IS ADDED TO THE DISPLAY.

PAGE - DISPLAYS THE PREVIOUS (BACK) ORNEXT (FWD) PAGE OF DATA ON THE SCREEN.
A PAGE MUST ALREADY BE DISPLAYED.
FILL - FILLS EACH BYTE OF A BLOCK OF DATA WITH A SPECIFIED VALUE.

MOVE - MOVES A BLOCK OF DATA TO SOME   OTHER LOCATION IN MEMORY.

SWAP - EXCHANGES TWO BLOCKS OF DATA.

CALL — CALLS A MACHINE CODE PROGRAM ASA SUBROUTINE. THE CALL COMMAND MAY BE
USED TO TRY A ROUTINE PROVIDED IT WILLOPERATE WHERE IT RESIDES IN MEMORY.
CAUTION!!! THIS UTILITY OCCUPIES THE BLUE RAM FROM 6000 THROUGH 7FFF HEX.
DO NOT ATTEMPT TO COPY, LOAD, UNPK,   EDIT, FILL, MOVE, OR SWAP INTO THIS
AREA! TO DO SO COULD CLOBBER BOTH THEUTILITY AND OTHER PROGRAMS IN MEMORY.

IT IS ALSO IMPORTANT TO NOTE THAT THE INSTRUCTIONS LOAD FROM 8000 THROUGH
9FFF HEX AND WILL OVERLAY ANYTHING IN THAT AREA WHEN THEY ARE REQUESTED.
A FEW FINAL NOTES:

ONCE A GAME CARTRIDGE TYPE PROGRAM HASBEEN COPIED, EDITED, AND SAVED, THE
TAPE MAY BE LOADED BY ASTROBASIC USINGTHE STATEMENT :INPUT %(24576) [GO].

TO ABORT ANY COMMAND IN PROGRESS, USE THE NORMAL "BOMB RECOVERY" PROCEDURE
FOR BLUE RAM BASIC AND THEN RUN THE   UTILITY AGAIN.

        HAPPY PROGAMMING!