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THIS IS A LIST OF ALL OF THE KNOWN BUGS IN THE TEK 4051. THE STATUS OF THE FIXES FOR EACH BUG BY VERSION IS ALSO GIVEN. WHEN A CHANGE IN THE BASIC PROGRAM CAN BE IMPLEMENTED TO AVOID A PROBLEM T NEEDED INFORMATION IS ALSO GIVFN.

THE RELEASF NUMBERS ARE IN REFERENCE TO THE FOLLOWING:

R0 - RELEASE 21.0 - DEMO BUILD (16 PARTS).
R1 - RELEASE 38.0 - INITIAL PRODUCTION BUILD (18 PARTS).
R2 - MATH PROBLEM FIXED (1 PART).
R3 - RELEASE 51.2 - FIXES FOR SYSTEM ERRORS AND GPIB PROBLEMS (8 PARTS).
R4 - RELEASE 20.1 - MORE GPIB PROBLEMS (2 PARTS).

1) PARSING OF STRING EXPRESSIONS.

THE PARSER WILL NOT ALLOW THE STRING EXPRESSION

<STRING-VAR OR LITERAL> <RELATIONAL-OP> <STRING-VAR OR LITERAL>

WHEN IT IS USED AS AN ELEMENT IN A PRINT, WRITE OR AN IMMEDIATE MODE EXPRESSION. THE STRING EXPRESSION IS TREATED CORRECTLY IN THE PLACES WHERE NUMERIC EXPRESSIONS ARE ALLOWED. THE FOLLOWING ARE CORRECT EXAMPLES:

```
10 DIM A(A$="YES")
15 FIND A$=B$
20 IF A$="NO" THEN 200
```

DOCUMENTATION WAS FIXED.

2) SUBSCRIPTED READS AND INPUTS

READS AND INPUTS INTO SUBSCRIPTED NUMERIC VARIABLES MAY CAUSF SYSTEM ERRORS. THE PROBLEM CAN BE FIXED IN THE BASIC PROGRAM BY DOIN(THE READ OR INPUT INTO A SCALAR VARIABLE AND ASSIGNING THE VALUF TO THE SUBSCRIPTED ELEMENT OF THE DESIRED ARRAY.

FIXED IN R3.

3) FLOATING POINT PACKAGE.

FLOATING POINT ADD PRODUCES WRONG ANSWERS WHEN THE EXPONENTS OF THE OPERANDS DIFFER BY 2 RAISED TO THE 256 TH. (APPROX. 10E+77). ALMOST ALL NUMERIC OPERATIONS ARE AFFECTED.

FIXED IN R2 (THIS IS THE ONLY CHANGE FROM R1).

4) I/O STATEMENTS WITH LONG VARIABLE LIST.

THE I/O STATEMENT PROCESSOR WILL FAIL IF THE VARIABLE LIST IS FAIRLY LONG AND AN INTERNAL BOUNDARY CONDITION IS NOT PASSED PROPERLY. THE RESULT OF THE I/O OPERATION IS UNPREDICTABLE. THE BOUNDARY CONDITION IS MET WHEN SCANNING THE VARIABLE LIST FROM RIGHT TO LEFT AND THE RESULT OF THE FOLLOWING EXPRESSION IS EQUAL TO 254 OR 255.

(SCALARS OR ARRAYS)*12 + (STRINGS OR LITERALS)*8 + (SEMICOLONS)*?

THE PROBLEM CAN BE FIXED IN SOFTWARE BY CHANGING THE VARIABLE LIST.

FIXED IN R3.

5) PERCENT MODE AND CONTROL CHARACTERS.

IF THE ALTERNATE DELIMITERS FOR EOL, EOF AND IGNORE ARE ALL SET TO BE THE SAME CHARACTER, THE RESULTS ARE UNPREDICTABLE.

NOT FIXED. THE PROBLEM HAS BEEN DOCUMENTED.

6) OPTION 1 AND MEMORY COMPRESS.

THERE IS AN INTERFACE PROBLEM WITH MEMORY COMPRESS AND THE DATA COMMUNICATIONS INTERFACE.

FIXED (CORRECTED IN OPTION 1).
ERROR IN 4051 FIXED IN R3.

7) PRINTING UNDEFINED STRINGS.

IF AN UNDEFINED STRING IS PRINTED, THE PRINT PROCESSOR DISPLAYS A NULL STRING INSTEAD OF SETTING AN ERROR.

FIXED IN R3.

8) GRAPHICS COMMANDS ON GPIB.

IF THE CLIPPING ALGORITHM CLIPS A VECTOR WHILE EXECUTING A DRAW OR AN AXIS COMMAND, THE SECONDARY ADDRESS FOR GPIB OUTPUT WILL NOT BE SET UP CORRECTLY.

FIXED IN R3.

9) ON EOF(<N>) THEN <STATEMENT-NO.>.

ARMING OF EOF ON UNITS ONLY WORKS FOR UNIT 0 CORRECTLY. IF 1<=N<=255, THE UNIT FOR DEVICE 0 IS ARMED. IF N>255, THE CORRECT ERROR MESSAGE IS GENERATED. IF N>9, NO ERROR IS GENERATED AND ONE SHOULD BE.

FIXED IN R3.

10) MAG TAPE FILES DESTROYED.

IF A DATA FILE THAT HAD DATA STORED IN IT, IS MARKED NEW BY THE KILL COMMAND, THEN THE FOLLOWING SEQUENCE IS EXECUTED:

```
FIND N
A=TYPE(0)
```

THE FILE HEADER ON THE TAPE WILL BE DESTROYED.

FIXED IN R4.

11) KEYBOARD COMPATIBILITY IN TTY MODE.

THE KEYBOARD DOES NOT WORK EXACTLY LIKE A 4012 IN TTY MODE. FOR EXAMPLE, THE "LOWER CASE" SPECIAL CHARACTERS WHICH ARE NOT VALID ON A TTY ARE TRANSMITTED.

NOT FIXED.

12) GPIB LINES EOI AND REN.

EOI AND REN ARE NOT CORRECTLY DRIVEN IN ALL CASES.

FIXED IN R3.

13) REWIND KEY IN INPUT.

PRESSING THE REWIND KEY WHILE THE 4051 IS IN INPUT MODE MAY CAUSE SERIOUS SYSTEM DAMAGE.

FIXED IN R3.

14) ABORT FROM GPIB HARDWARE ERRORS.

IF A GPIB DEVICE IS FAILING TO HANDSHAKE THE BUS, THE ABORT FUNCTION WILL HANG SINCE IT TRIES TO DO AN INTERFACE CLEAR, UNTALK AN' UNLISTEN.

FIXED IN R3.

15) FIND AND MARK THROUGH PRINT.

IF THE SECONDARY ADDRESS OF A PRINT OPERATION TO THE INTERNAL MAG TAPE IS SET TO DO A FIND OR MARK. THE DESIRED FUNCTION WILL BE PERFORMED BUT AN ERROR IS THEN ISSUED.

FIXED IN R3.

16) EVALUATOR RECURSIONS AND MEMORY COMPRESS.

IF A MEMORY COMPRESS IS DONE WHILE A RETURN ENTRY FOR AN ON UNIT OR A FUNCTION KEY IS ON THE STACK, THE EVALUATOR MAY NOT BE ABLE TO EXECUTE THE RETURN CORRECTLY.

IF THE PROGRAM WAS LOADED IN ORDER (WITH AN OLD) AND NO APPENDS OR DELETES OF LINES HAVE OCCURRED, THE PROBLEM WILL NOT SHOW UP.

FIXED IN R3

17) IRG ON MAG TAPE.

THE EXTRA SPACE ALLOWED FOR INTERRECORD GAPS ON THE MAG TAPE IS NOT AS LARGE AS THE DESIGN VALUE. THE TAPE IS STILL WITHIN WORST CASE SPECS.

NOT FIXED.

18) BREAK LIGHT

IF A PROGRAM IS LOADED AND STARTED (OLD IN A PROGRAM OR AUTO LOAD) AND THE FIRST LINE IS AN INIT OR DELETE ALL AND THE USER SETS THE BREAK PENDING STATUS (PRESSING BREAK KEY ONCE), THEN THE 4051 MAY RESET THE INTERNAL BREAK PENDING STATUS AND NOT STOP THE PROGRAM OR TURN OFF THE BREAK LIGHT.

FIX IS VERY COMPLEX AND PROBABLY WILL NEVER BE DONE.

19) GPIB IS NOT COMPLETELY RESET WITH INIT.

UNDER SOME CONDITIONS THE 4051 WILL NOT GET OFF THE BUS WHEN AN INIT IS DONE (LISTEN AND TRI-STATE). THIS CAUSES NO SERIOUS PROBLEMS BUT IT LOOKS LIKE A DEVICE ERROR.

FIXED IN R3.

20) DEVICE 30 AND GPIB.

DEVICE 30 WILL NOT RECEIVE UNTALK/UNLISTEN UPON CONCLUSION OF AN I/O OPERATION.

FIXED IN R3.

21) AUTOMATIC HARDCOPY MODE.

THE 4051 ALWAYS MAKES A COPY BUT MAY NOT DO THE PAGE AFTER THE COPY. THE SIGNAL SPECS FOR THE HCU ARE NOT WELL DEFINED AND SOME UNITS MAY STILL FAIL.

IMPROVED IN R3.

22) USER FUNCTIONS (DEF FNA).

IF A USER FUNCTION APPEARS IN THE ARGUMENT LIST OF AN I/O STATEMENT WHICH SPECIFIES AN OPTIONAL I/O ADDRESS, THEN THE I/O OPERATION WILL REFERENCE THE DEFAULT DEVICE.

THE PROBLEM CAN BE AVOIDED BY DOING COMPUTATIONS NEEDING USER FUNCTIONS IN LINES PRECEDING THE I/O OPERATIONS.

NOT FIXED.

1.

23) ROM PACKS AND DELAYED INTERRUPTS.

IF A ROM PACK ARMS THE DELAYED REALTIME SERVICE REQUEST BIT IN THE PIA TABLE WHEN THE SYSTEM BECOMES SAFE, CONTROL WILL BE PASSED TO THE PSEUDO DEVICE HANDLER IN THE ROM PACK RATHER THAN THE REALTIME SERVICE ROUTINE. THIS BUG AFFECTS NO USER PERCEIVED FEATURE.

FIXED IN R3.

24) CLOSE COMMAND (I/O SYSTEM).

THE CLOSE COMMAND DOES NOT WORK CORRECTLY WITH EXTERNAL MAG TAPE OR FILE DEVICES DUE TO SYNTAX DEFINITION ERRORS. THE CORRECT SYNTAX IS:

<OPTIONAL-LINE-NO.> CLOSE <OPTIONAL-CONSTANT>.

THE CONSTANT CAN BE IN THE RANGE 1 TO 9.

I/O ERROR FIXED IN R3.

25) CLOSE COMMAND (PARSER).

THE PARSER INCORRECTLY ACCEPTS AN OPTIONAL GPIB ADDRESS IN THE CLOSE COMMAND.

NOT FIXED.

26) RECALL LINE KEY AND THE EDITOR.

WHEN A 73 CHARACTER LINE IS RECALLED WITH THE EDITOR EVEN SINCE I IS 1 CHARACTER TOO LONG, THE EDITOR WILL NOT RETRY WITH SHORT KEYWORDS.

FIXED IN R3.

27) POLL COMMAND.

THE GPIB POLL COMMAND IS FOLLOWED BY AN UNTALK COMMAND. THE GPIB STANDARD DOES NOT REQUIRE THIS ACTION. BUT IT IS REQUIRED FOR CORRECT OPERATION.

WILL NOT BE CHANGED SINCE WE LIKE IT THAT WAY.

28) APPEND AND SECRET.

APPEND FAILS IF THE LOADED PROGRAM IS SECRET AND THE INCOMING PROGRAM IS NOT SECRET. IF THE INCOMING PROGRAM IS SECRET, THE FUNCTION IS SUCCESSFUL.

NOT FIXED.

29) READING BINARY STRINGS.

BINARY STRING OUTPUT WRITES ONE EXTRA BYTE. WHEN THE STRING IS READ, THE EXTRA BYTE MAY DO SERIOUS SYSTEM DAMAGE. READING STRINGS FROM DATA STATEMENTS WILL ALSO MOVE ONE EXTRA BYTE.

WHEN READING STRINGS, SYSTEM DAMAGE CAN BE PREVENTED IF THE STRING IS DIMENSIONED ONE LARGER THAN THE INCOMING STRING.

FIXED IN R4. HOWEVER, TAPES CREATED WITH EARLIER VERSIONS WILL NOT BE COMPATIBLE. A ROM PACK WILL BE ISSUED TO CONVERT OLD TAPES.

30) AUTO CR IN ALPHA FONT

IF ONE OF THE SPECIAL CHARACTERS THAT IS SET BY ALPHA FONT IS DISPLAYED AT THE RIGHT MARGIN, THE AUTO CR WILL NOT OCCUR.

NOT FIXED.

311 MEMORY FULL.

AN EXTRANEOUS MEMORY FULL MESSAGE IS SOMETIMES GENERATED IN CALCULATOR MODE. THE PROBLEM IS NOT REPRODUCIBLE AND HAS ONLY BEEN REPORTED TWICE.

THIS PROBLEM WILL NOT BE WORKED ON UNTIL A SEQUENCE OF OPERATIONS THAT CAUSE IT CAN BE IDENTIFIED.

32) RANDOM ERRORS FROM THE EOF.ON UNIT.

MEMORY COMPRESS DOES NOT UPDATE THE POINTERS TO USER DEFINED FUNCTIONS AND ACTIVE ON UNITS CORRECTLY. IF THE TARGET LINE OF AN ON UNIT IS MOVED BY A MEMORY COMPRESS, THE 4051 WILL PRODUCE UNPREDICTABLE RESULTS WHEN THAT ON CONDITION IS RAISED.

THIS PROBLEM CAN BE AVOIDED BY DOING THE FOLLOWING. IF A PROGRAM IS LOADED IN A RANDOM ORDER (SECTIONS APPENDED) OR PARTS OF THE PROGRAM ARE DELETED, THE ON UNITS SHOULD BE SET TO POINT TO LINES THAT ARE IN THE ORIGINAL SECTION OF THE PROGRAM. THIS CAN BE ACCOMPLISHED BY USING GOTO'S EARLY IN THE PROGRAM FOR THE ON UNITS.

USER DEFINED FUNCTIONS SHOULD ALSO BE INITIALIZED EARLY IN THE PROGRAM.

THE PROGRAM:

```
100 ON EOF(0) THEN 5000
110 ON SIZE THEN 6000
120 . . .
```

SHOULD BE REPLACED BY:

```
100 ON EOF(0) THEN 130
110 ON SIZE THEN 140
120 GO TO 150
130 GO TO 5000
140 GO TO 6000
150 . . .
```

OR BY:

```
100 ON EOF(0) THEN 200
110 ON SIZE THEN 300
120 GO TO 400

200 . . . (EOF ROUTINE)

300 . . . (SIZE ERROR ROUTINE)

400 . . . (BEGINNING OF MAIN PROGRAM OR OVERLAY AREA)
```

NOT FIXED.

33) NULL BINARY STRINGS.

THE I/O SYSTEM DOES NOT HANDLE NULL BINARY STRINGS CORRECTLY.

FIXED IN R4.

34) MAG TAPE STATUS.

IF THE MAG TAPE STATUS (PRINT @33,0:) IS CHANGED WHEN THE TAPE IS NOT AT THE LOAD POINT, THE TAPE MAY BE DESTROYED.

NOT FIXED.

35) EOF AND NO HEADER MODE.

EOF IS NOT DETECTED WHEN WRITING IN NO HEADER MODE.

THIS PROBLEM CANNOT BE FIXED.

36) TYPE SECONDARY ADDRESS IN INPUT.

INPUT @33,6:3 (SAME AS TYP(0)) DOES NOT WORK ON THE EXTERNAL MAG TAPE.

NOT FIXED.

37) CLOSE SECONDARY ADDRESS.

PRINT @33,2: (CLOSE) DOES NOT WORK ON THE INTERNAL MAG TAPE.

NOT FIXED.

38) PRINT AND ARRAYS

IF A IS AN ARRAY AND THE FOLLOWING IS EXECUTED **PRINT <STRING>;A.** ALL OF THE BLANKS ARE SUPPRESSED.

NOT FIXED.

39) TRANSLATION OF NOT.

THE PRECEDENCE OF **NOT** IS NOT CORRECT. DISPLAYING SOME LINES MAY CAUSE VERY STRANGE RESULTS. THE USE OF PARENTHESIS TO INPUT THE LINE WILL NOT HELP.

THE EXPRESSION CAN BE BROKEN DOWN INTO TWO OR MORE EXPRESSIONS.

NOT FIXED.

40) SRQ AND EOI INTERRUPTS ARE SOMETIMES LOST.

UNDER SOME TIMING CONDITIONS, **SRQ** AND/OR **EOI** INTERRUPTS FROM THE GPIB MAY BE LOST.

IF THE USER WILL USE THE **RETURN** STATEMENT TO EXIT SERVICE ROUTINES THE PROBABILITY OF INTERRUPTS BEING LOST IS VERY LOW.

FIXED IN R4.

41) 4051 AS GPIB CONTROLLER.

WHEN THE 4051 IS A LISTENER, IT ASSUMES IT IS THE ONLY LISTENER AN MAY ASSERT **ATN** AND SEND **UNTALK**. **UNLISTEN** BEFORE SLOWER LISTENERS HAVE RECEIVED THE LAST BYTE OF DATA. **TCS** - TAKE CONTROL SYNCHRONOUSLY IS NOW IMPLEMENTED, HOWEVER ONLY IF THE 4051 IS PARTICIPATING IN THE TRANSFER.

FIXED IN R4.

42) RBYTE AND EOI.

IN RBYTE, THE 4051 WILL INCORRECTLY RETURN THE EOI STATUS (BY NOT NEGATING THE VALUE RETURNED) ON ALL BUT THE FIRST BYTE, IF THE TALKER LEAVES EOI ASSERTED FOR MULTIPLE DATA BYTES.

FIXED IN R4.

43) EARLY EOI.

THE 4051 MAY SIGNAL EOI ONE BYTE EARLY DUE TO A TIMING PROBLEM.

FIXED IN R4.

44) THE INIT COMMAND DOES NOT RESET THE STACK.

THE INIT COMMAND DOES NOT RESET THE EXECUTION STACK. THE REFERENCE MANUAL STATES THE STACK WILL BE CLEARED.

THE DOCUMENTATION WILL BE CHANGED.

NOT FIXED.

45) DELETE AND USER FUNCTIONS.

THE STATEMENT DELETE <STMT-1>,<STMT-2> DOES NOT RESET THE LINKAGE FOR USER FUNCTIONS FNX, FNY AND FNZ. THESE FUNCTIONS CAN BE USED UNTIL A MEMORY COMPRESS OCCURS, BUT THEY CANNOT BE DISPLAYED OR SAVED

NOT FIXED.

46) AXIS AND ARRAY.

THE **AXIS** COMMAND DOES NOT CHECK FOR ARRAYS AS ARGUMENTS. THE ARRAYS ARE NOT LEGAL ARGUMENTS AND CAUSE STRANGE RESULTS.

NOT FIXED.

47) POINTER AND THE RUBOUT KEY.

THE **POINTER** COMMAND CAN BE TERMINATED WITH THE RUBOUT KEY. THIS IS NOT A SERIOUS PROBLEM, BUT IT IS INCONSISTENT WITH THE **INPUT** COMMAND.

THIS SHOULD BE NOTED IN THE SYSTEM DOCUMENTATION.

NOT FIXED.

48) BREAK AND SIZE ERRORS.

IF THE FOLLOWING PROGRAM IS RUN AND THE BREAK KEY IS PRESSED DURING THE EXECUTION OF LINE 110. THE BREAK MAY NOT BE HONORED. THE BREAK PENDING LIGHT MAY ALSO BE LEFT ON.

```
100 ON SIZE THEN 100
110 A=1/0
```

THE FIX FOR THIS PROBLEM IS VERY COMPLEX AND WILL PROBABLY NEVER BE IMPLEMENTED.

49) MAG TAPE ILLEGAL SECONDARY ADDRESSES.

ISSUING ILLEGAL SECONDARY ADDRESSES TO THE INTERNAL MAG TAPE MAY CAUSE FILE DAMAGE.

NOT FIXED.

50) LISTING IN CR/LF MODE.

WHEN LISTING OR SAVING A PROGRAM WHICH CONTAINS A LF (CONTROL J) IN A STRING WHILE IN CR/LF MODE, THE LF WILL CAUSE A "LINE TOO LONG" MESSAGE AND THE LISTING TO STOP.

FIXED IN R4.

51) LINE EDITOR.

IF THE FOLLOWING SEQUENCE IS ENTERED, THE EDITOR WILL BLANK OUT TWO CHARACTERS IN THE LINE.

A(CR)
ABCD(CLEAR LINE)
(REPRINT LINE)

THE EDITOR RETURNS:

A D (THE CHARACTERS B AND C ARE GONE).

NOT FIXED.

52) DELETE AND SYSTEM POINTERS.

UNDER CERTAIN CONDITIONS DELETE WILL NOT UPDATE ALL OF THE INTERNAL SYSTEM POINTERS CORRECTLY. THIS HAS TWO VISIBLE SIDE EFFECTS. THE FIRST IS THAT DELETING ON UNITS (THE TARGET LINES) OR USER FUNCTIONS (DEF FNX). THE TARGETS CAN STILL BE EXECUTED BUT THEY CANNOT BE LISTED OR SAVED. THE TARGET LINES CAN BE DESTROED OR DAMAGED BY A MEMORY COMPRESS. THE SECOND PROBLEM APPEARS IF THE DELETED LINES INCLUDE THE LINES IMMEDIATELY FOLLOWING THE DELETE. THE LINES FOLLOWING THE DELETE MAY BE EXECUTED ONCE, EVEN THOUGH YOU THINK THEY ARE GONE.

NOT FIXED.

1.1 PART NUMBERS BY RELEASE.

THE FOLLOWING TABLE LISTS THE VERSION OF EACH PART THAT GOES WITH EACH RELEASE. THE PART NUMBERS MARKED WITH THE "*" WERE CHANGED IN THAT RELEASE.

	21	38	38 rev	51	20
PART NUMBER	R0	R1	R2	R3	R4
156-0659-XX	00*	01*	01	02*	02
156-0660-XX	00*	01*	01	01	01
156-0661-XX	00*	01*	01	01	01
156-0662-XX	00*	01*	01	01	01
156-0663-XX	00*	01*	01	01	01
156-0664-XX	00*	01*	01	02*	02
156-0665-XX	00*	01*	02*	02	02
156-0666-XX	00*	01*	01	01	01
156-0667-XX	00*	01*	01	02*	02
156-0668-XX	00*	01*	01	01	02*
156-0669-XX	00*	01*	01	01	01
156-0670-XX	00*	01*	01	01	01
156-0671-XX	00*	01*	01	02*	02
156-0672-XX	00*	01*	01	01	01
156-0573-XX	00*	01*	01	02*	03*
156-0674-XX	00*	01*	01	02*	02
156-0747-XX		00*	00	01*	01
156-0748-XX		00*	00	01*	01

1.2 MACHINES BY RELEASE.

THE FOLLOWING TABLE LISTS THE MACHINE SERIAL NUMBERS, DATES, AND OTHER COMMENTS FOR EACH RELEASE OF THE 4051 FIRMWARE.

RFL. NO.	SERIAL NUMBER	DATE STARTED	COMMENTS
R0	B010101		DEMO BUILD (ALL MACHINES NOW UPDATED AND IN USE AT TEK).
R1	B010151		FIRST PRODUCTION BUILD.
R2	B020263	MARCH 2, 1976	MATH ROM REPLACED.
R3	B030540	MAY 3, 1976	GENERAL SYSTEM UPDATE.
R4			NOT AVAILABLE.