DATA SYSTEMS DIVISION

technical notes

1) Check #10 re whatever ?
2) #2 cuts trace J3-45
Bd #3 connects 5100 J-46
what pins to J3-45 in Some
also Fig 1 for #2

Rec. 2/10/81

Exidy Systems, Inc
1234 Elko Dr.
734-9831

DATA SYSTEMS DIVISION

technical notes
Index

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1	REVISIONS OF SORCERER II BOARDS	APRIL 1980	
2	*DISABLE EXT. RESET (Dave)* USE OF 32K SORCERER W/VDS & FDS	APRIL 1980	
3	MODIFICATION OF S100 PCB *MOVE DISC TO BC04*	NOVEMBER 1980	
4	CASSETTE INTERFACE SORCERER I	MAY 1980	OCT. 1980
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6	CASSETTE INTERFACE MODIFICATION	JUNE 1980	OCT. 1980
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9	CASSETTE INTERFACE MODIFICATION	OCTOBER 1980	
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11	USE OF 16K EPROM PACK	NOVEMBER 1980	JAN. 1981

<u>PRELIMINARY INFORMATION FOR MAKING BOARD REVISIONS</u>

I.   REMOVING THE LOGIC BOARD FROM THE SORCERER

   1. Remove the screws attaching the top of the
       Sorcerer to its bottom.

   2. Facing the front of the Sorcerer, lift off the
       top. Disconnect the keyboard cable connector
       retainer clip and unplug the cable. Put the top
       aside.

   3. Unplug the transformer connector. The transform-
       er connector is composed of several wires
       fastened together, coming from the black
       transformer box in the rear left of the Sorcerer
       and plugging into the piggy-back power supply
       board.

   4. Unscrew the 6 screws fastening the logic board to
       the bottom case and lift the logic board from the
       case.

II. DETERMINING THE SORCERER REVISION LEVEL

   1. Set the board down in front of you so EXIDY, INC,
       in the center of the board, can be read upside
       down. Search for the EXIDY, INC label located
       behind the third row of chips to your left.

   2. Immediately to the right of EXIDY, INC are the
       FAB and ASSY (assembly) numbers. Both numbers
       are hyphenated and the Revision level of your
       Sorcerer II is at the end of each number.

   FOR EXAMPLE:

           FAB SC 77-3240-24-A1

   "A1" means that this board is a Revision A.

III. PRELIMINARY INFORMATION FOR SOLDERING

1. To make the necessary modifications, you need the following tools:

    Phillips screwdriver (medium size)
    Pencil tip soldering iron
    Wire stripper
    Wire cutters (small)
    X-acto knife
    Solder
    Kynar wire wrap wire (2 feet, 30 gauge)

2. The logic board should be faced so the center EXIDY, INC label is right-side-up. All Integrated Circuit (IC) numbers may be quickly found by looking up the row number (letters A to H on the side of the board) and column number (numbers labeled from left to right 1-22). For example, IC 8A is in column 8 and row A. Looking at the IC with the notch on the top, all pin numbers are read counter-clockwise, starting with pin #1, located left of the IC notch, as shown in the following illustration for a 16 pin IC. All IC pins are numbered in the same direction regardless of the number of pins they contain.
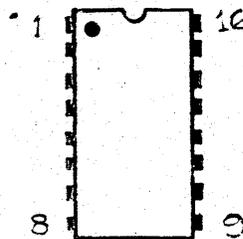
3. Wire wrap wire should be neat and close to the board. When soldering Kynar wire, only a small amount of insulation need be removed. Be careful not to make bridges between pins and traces on the board. Use an X-Acto knife for cuts. This can be done by making two cuts 1/16" apart and removing the center.

∃xidy DATA SYSTEMS DIVISION
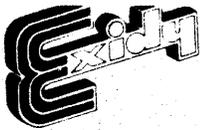
technical notes

SUBJECT: Revision of Sorcerer II boards and   the   Display Disk
System and Floppy Disk Subsystems.

PROBLEM: The Display Disk System and Floppy Disk Subsystem can
not perform   at   their optimum capacity with Revision
A3, B, and C2 Sorcerer II boards.

SOLUTION: Determine the Revision level of the   Sorcerer II and
make modifications   to   the main logic board to bring
it up to Revision C4 specifications.

   I.   MODIFICATIONS   NECESSARY   TO   BRING   C2   BOARD   TO   C4
SPECIFICATION

     1.   Remove   R35   resistor and replace with a 1/4 watt
1%   270K   OHM   resistor. R35's   location   is
illustrated below in figure.
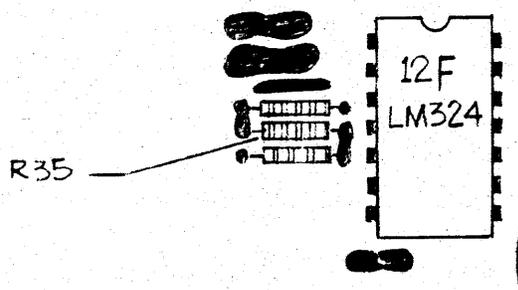
RESISTOR COLOR CODE
BANDS

120KOHM   =   brown,
orange, yellow gold

270K   = red, violet,
yellow, gold

     2.   Solder   in the following jumpers on the component
side of the main logic board.   Using the 30 gauge
Kynar wire wrap wire.

14B-10	TO	14B-14
15B-10	TO	6D-15
8A-15	TO	11C-12
11C-13	TO	8D-2
11C-9	TO	12C-11
10C-8	TO	12C-12

3. Make the following cuts to the circuit board traces with an X-Acto knife as previously described:

IC	Pin #	Side of board
8A	15	both (component and circuit sides
10C	8	circuit side
11C	9	circuit side

II. MODIFICATIONS NECESSARY TO BRING A3 AND B SORCERER BOARDS TO C4 SPECIFICATION

1. Add 150 pf Capacitor from 2F-1 to Ground Plane.

2. Solder in the following jumpers on the component side of the main logic board, using 30 gauge wire wrap wire.

8A-15	TO	11C-12
8A-16	TO	14B-8
14B-10	TO	14B-14
12C-11	TO	11C-9
1F-2	TO	3H-11
1F-13	TO	2F-2
14B-12	TO	12C-9
12C-11	TO	14B-3
12C-12	TO	14B-13
12C-12	TO	10C-8
10C-8	TO	9C-9
9D-4	TO	15B-11
15B-10	TO	6D-15
16H-7	TO	16H-10
8D-2	TO	11C-13
14C-3	TO	9B-4
10C-13	TO	14C-1
8D-2	TO	14C-2
14B-3	TO	14B-11

3.   Make the following cuts to the circuit board
     traces with an X-Acto knife as previously
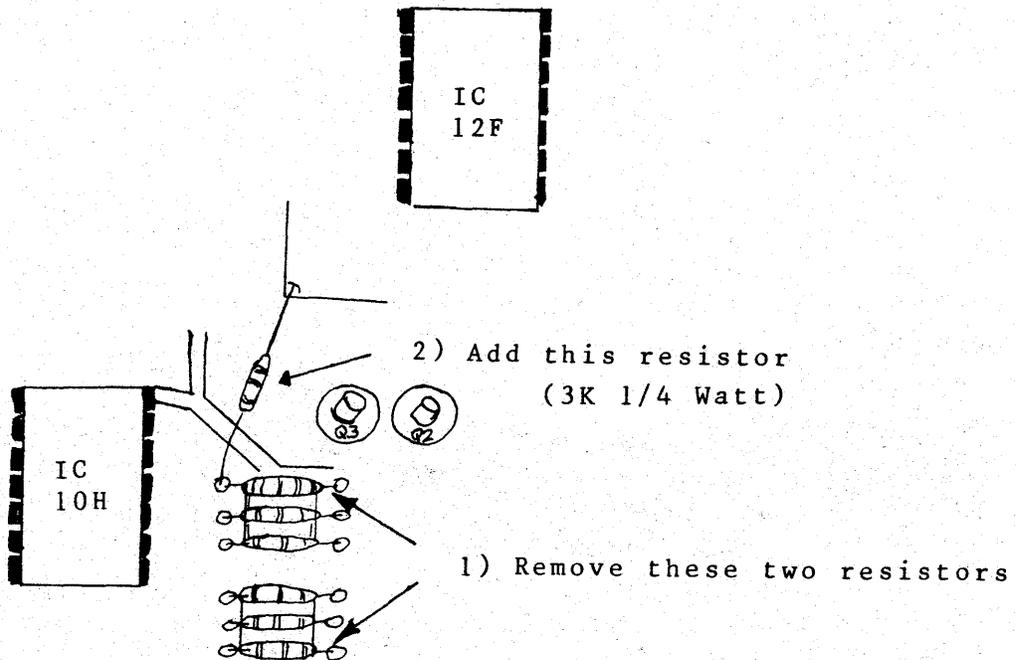   described.

     a) On circuit side:
             9B-4   (both traces)
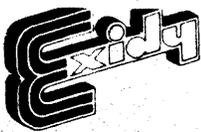   8A-15
             10C-8
             8A-16
             12C-11

     b) On component side
             8A-15
             11C-9
             10C-8
             10C-11
             1F-18,19

4.   Remove R35 and replace with a 1/4 watt 1% 270K
     OHM resistor.

5.   Make video mod changes as indicated in the
     drawing below, by taking out the two resistors
     near IC 10H and adding another one:

2) Add this resistor
   (3K 1/4 Watt)

1) Remove these two resistors

technical notes

Number 2
April 1980

SUBJECT: 32K Sorcerer I computers and the Floppy Disk Subsystem and Display Disk System.

PROBLEM: The Floppy Disk Subsystem and the Display Disk System can not perform at their optimum capacity with 32K Sorcerer I computers.

SOLUTION: Incorporate UP8K and Expansion Bus modifications.

REFERS: ECN 100010.

1. Remove the screws attaching the top of your Sorcerer to its bottom.

2. Facing the front of the Sorcerer, lift off the top and put it aside.

3. Look for the Expansion Bus traces (J3) at the back right edge of your Sorcerer board.

4. Count each trace from the right corner of the board in toward the center and cut the third trace (J3-45 RESET EXP). Cut only this trace at the PCB connector as shown in Figure 1.
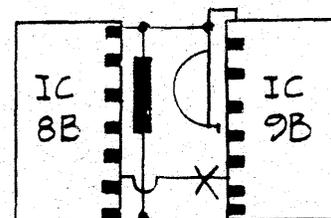
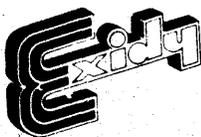NOTE: CUTTING THIS TRACE DISABLES THE EXTERNAL RESET CAPABILITY OF A SORCERER I.

Cut on 11/10/81 over E. Mentzer 11/11/81

5. To make UP8K Modification, install jumpers as follows:

   a) 11H-11 to 8E-13
   b) 11H-12 to 10B-10
   c) 11H-13 to 9B-8
   d) 8E-12 to 8B-5
   e) cut the trace between pins 5 and 6 on IC 9B as shown to the right by the X.

Unused Devices
11 H = 7400
2 input NAND gate
Pins 11,12,13 = one set

8E = 7404
inverter

IC 8B   IC 9B

Exidy DATA SYSTEMS DIVISION

technical notes

NUMBER 3
15 NOVEMBER 80

SUBJECT: Modification of S100 P.C.B.

PROBLEM: The Micropolis disk controller's boot address conflicts with the computer's (48K) memory.

SOLUTION: 1. On S-100:

    a. Jumper S-100 bus pin 21 to 1A-11. } *
    b. Jumper 1A pin 9 to J3 pin 46.

    2. On Micropolis disk controller PCB:

    a. Remove all jumpers at location D4.
    b. Jumper D8 pin 4 to D8 pin 8.
    c. Jumper D8 pin 9 to J1 pin 21 (bottom edge connector).
    d. On circuit side of PCB. at D8 cut trace from pin 2 to pin 4.
    e. Boot address is now at BC00H.

Differs from SUN II(1):8, Jan 80

    * *see SA 4(6):135, Sept 82*

EXI DATA SYSTEMS DIVISION

technical notes

Number 4
May 1980

SUBJECT: Cassette interface test procedure for Sorcerer I.

PROBLEM: Unreliability of cassette interface circuit.

SOLUTION: Proper procedure for setting up cassette interface.

1.   Jumper C12 to R1.
     a.   LED will go out.

2.   Use Digital Multimeter (Fluke 8010A or Equivalent.)
     (Do not use oscilloscope) to check 1B (LM324).   If batch is
     Taiwan 7945AC   or   Malaysia 7919AB, remove and replace with
     Malaysia 7945AB.

4.   Check that R6 has a 270K   resistor.   If   not,   then replace
     resistor with a 270K.

5.   Disconnect jumper from cassette interface. Circuit should
     now be functional. If problems still exist, contact Exidy
     Customer Service.

DATA SYSTEMS DIVISION

technical notes

Number 5
May 1980

SUBJECT: Cassette interface test procedure for Sorcerer II.

PROBLEM: Unreliability of cassette interface circuit.

SOLUTION: Proper procedure for setting up cassette interface.

1.   Jumper C82 to R66.
     a.   LED will go out.

2.   a.   Use Digital Multimeter (Fluke 8010A or Equivalent.)
          (Do not use Oscilloscope).
     b.   Check 14F pin 11 for 2.0V.
     c.   Adjust VR1 for 2.00V setting.

3.   Check 1B (LM324).   If batch is Taiwan 7919AB or Malaysia
     7919AB, remove and replace with Malaysia 7945AB.

4.   Check that R35 has a 270K resistor.   If any other value,
     then replace resistor with a 270K.

5.   Disconnect jumper from cassette interface. Circuit should
     now be functional. If problems still exist, contact Exidy
     Customer Service.

technical notes

6/1

SUBJECT: Cassette interface modification

PROBLEM: Unreliability of cassette interface circuitry.

SOLUTION: To verify that the phase lock loop oscillator (PLL)
          will adjust through the lowers (resting) frequency
          and adjust the PLL to lock in the required capture
          range.

I.   Equipment needed:

   A. An oscilloscope with 500 KHz minimum bandwidth that
      includes a low capacitance.

   B. A ground isolating plug for AC.

   C. A jumper wire about 4" lon~   'ps on
      each end.

   D. Soldering Iron and ass~

II. Interface changes r~

RECEIVER: ⊥   SORCERER II

13K   to   R4   R62

270K   R6   R35

10~   mica   C16   C67

                    ~isc ceramic   C18   C66

           ~MOVE   R5   R34

      ~o   120K (MOTOROLA ONLY   R17   R69
                IF RCA LEAVE 68K)

~ANSMITTER

   10K   to   1K   R23   R65

   470 ohm   to   4.7K   R24   R64

#6
Sequessel

III. Initial Setup:

    A. Disassemble Sorcerer

        1. Take of top of the unit and place at a right angle on the right side of the base.

        2. Keep the keyboard connected to the main computer board.

        3. Connect the video monitor cable.

        4. Connect the AC power.

    B. Set up the oscilloscope.

        1. Use the AC ground adapter on the power cord and plug into the AC.

        2. Set the input voltage "mode" to "DC".

        3. Set input voltage attenuation for 2 volts/div or 10 volts P-P full scale.

        4. Ground probe on the point nearest the circuit being measured. Use the shortest ground path between the probe and ground.

IV. Check out PLL frequency.

    A. Check PLL frequency

        1. Connect the Probe to pin 4 of the PLL:

            a. On the Sorcerer I IC 3C.
            b. On the Sorcerer II IC 14F.

        2. Reset the Sorcerer.

        3. Adjust VR1 for a full wave, squarewave of 60us to 65us. VR1 should be in the middle 1/3 of its wiper travel.

    B. Check PLL Lock on Range

        1. Set the Oscilloscope time/div (sweep) to 500us/DIV or 5 KHz.

        2. Connect the jumper wire from the "ear" jack center conductor to the junction of:

            a. R22 & R23 on the Sorcerer I

   b. R43 & R65 on Sorcerer II

3. Connect the probe pin 9 of the PLL:

   a. IC 3C on the Sorcerer I.
   b. IC 14F on the Sorcerer II.

4. Hit RESET and type the following:

          SA T 0 2FFF <Carriage Return>

5. Adjust scope for a stable display.

6. The signal should range from 0 volts to minimum of
   3.5 volts Adjust VR1 within the middle 1/3 of its
   mechanical range.

7. The signal should look like Figure 2.

8. Remove jumper wire and put Sorcerer back together.

C. If problems persist do not hesitate to contact the
   Exidy Customer Service Department for further help.

       ****
       *   SPECIAL NOTE: *
       *   THIS NOTE SUPERCEDES ALL   *
       *   RELATED CASSETTE INTERFACE BULLETINS *
       ****

DATA SYSTEMS DIVISION

technical notes

SUBJECT: TEC/CITOH DAISEY WHEEL PRINTERS

PROBLEM: THE DAISEY WHEEL WILL NOT INTERFACE PROPERLY. THE
            HANDSHAKING SQUENCE IS NOT OPERATING SUFFICIENTLY.

SOLUTION: MODIFICATION TO THE TEC/CITOH CPU 8BIT P.C.B.

1. REMOVE TOP REAR COVER AND SET ASIDE.

2. REMOVE BRACKET HOLDING DOWN THE FOUR (4) PRINTED
   CIRCUIT BOARDS.

3. DISCONNECTS THE TWO CABLES FROM THE RIGHT REAR
   PRINTED CIRCUIT BOARD.

4. REMOVE THE RIGHT REAR PRINTED CIRCUIT BOARD FROM
   THE   PRINTER.   IT IS LABLED AS FOLLOWS: TEC
   FP-1500-25 CPU 8 BIT ZEE 61-81101.

5. MAKE THE FOLLOWING MODIFICATIONS TO THE P.C.B.:

   A. CUT THE TRACE ON THE COMPONENT SIDE FROM IC #17
      PIN ONE (1).

   B. SOLDER A JUMPER FROM IC #17 PIN ONE (1) TO IC
      #13 TO PIN THIRTY-SEVEN (37).

6. REINSTALL P.C.B. INTO UNIT, THE PRINTER WILL NOW
   WORK PROPERLY.

technical notes

SUBJECT: DDS and FDS fail to boot and show excessive error messages. Also, cassette fails to load or save effectively.

PROBLEM: RTV silicon rubber used for gypting Exidy poteniometers on disk controller P.C>B. (VR1) and cassette interface (VR1) has caused deterioration of wipers and cause related adjustments to become maligned.

SOLUTION: Remove above mentioned VR's and replace.

A.   DDS and FDS

1.   Remove VR1 (5K poteniometer) on disk controller PCB (77-3352-15) replace with an equivalent 5K pot.

2.   A field adjustment may be made by doing the following instructions:

     a. Move boot address into RAM by giving monitor command MO BF00 BFF 1000

     b. Modify loader as follows:
        1. EN 1071: 03
           EN 1072: E0/

        2. EN 1084: 00
           EN 1085: 10/

        3. EN 10A6: 00
           EN 10A7: 10/

3.   Begin adjustment with potentiometer turned fully counter-clockwise and adjust until error message cease and control returns to monitor prompt (>).

B. CASSETTE FAILURES

A. Remove VR1 (100K) and replace with an equivalent.

B. Adjustment for VR1 should be in accordance of the criteria set in technical note #6.

DATA SYSTEMS DIVISION

technical notes

Number 9
OCTOBER, 1980

SUBJECT: Cassette interface modification

PROBLEM: Unreliability of cassette interface circuitry.

SOLUTION: To verify that the phase lock loop oscillator (PLL)
           will adjust through the lowers (resting) frequency
           and adjust the PLL to lock in the required capture
           range.

I.   Equipment needed:

   A. An oscilloscope with 500 KHz minimum bandwidth that
      includes a low capacitance probe

   B. A ground isolating plug for AC.

   C. A jumper wire about 4" long with insulated clips on
      each end.

   D. Soldering Iron and associated tools.

II. Interface changes required:

Receiver:			Sorcerer I	Sorcerer II
13K	to	4.7K	R4	R62
270K	to	10K	R6	R35
1000 pf	to	620 pf silver mica	C16	C67
1000 pf	to	330 pf disc ceramic	C18	C66
3.3 meg	to	REMOVE	R5	R34

III. Initial Setup:

    A. Disassemble Sorcerer

        1. Take of top of the unit and place at a right angle on the right side of the base.

        2. Keep the keyboard connected to the main computer board.

        3. Connect the video monitor cable.

        4. Connect the AC power.

    B. Set up the oscilloscope.

        1. Use the AC ground adapter on the power cord and plug into the AC.

        2. Set the input voltage "mode" to "DC".

        3. Set input voltage attenuation for 2 volts/div or 10 volts P-P full scale.

        4. Ground probe on the point nearest the circuit being measured. Use the shortest ground path between the probe and ground.

IV. Check out PLL frequency.

    A. Check PLL frequency

        1. Connect the Probe to pin 4 of the PLL:

            a. On the Sorcerer I IC 3C.
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        2. Reset the Sorcerer.

        3. Adjust VR1 for a full wave, squarewave of 60us to 65us. VR1 should be in the middle 1/3 of its wiper travel.

    B. Check PLL Lock on Range

        1. Set the Oscilloscope time/div (sweep) to 500us/DIV or 5 KHz.

        2. Connect the jumper wire from the "ear" jack center conductor to the junction of:

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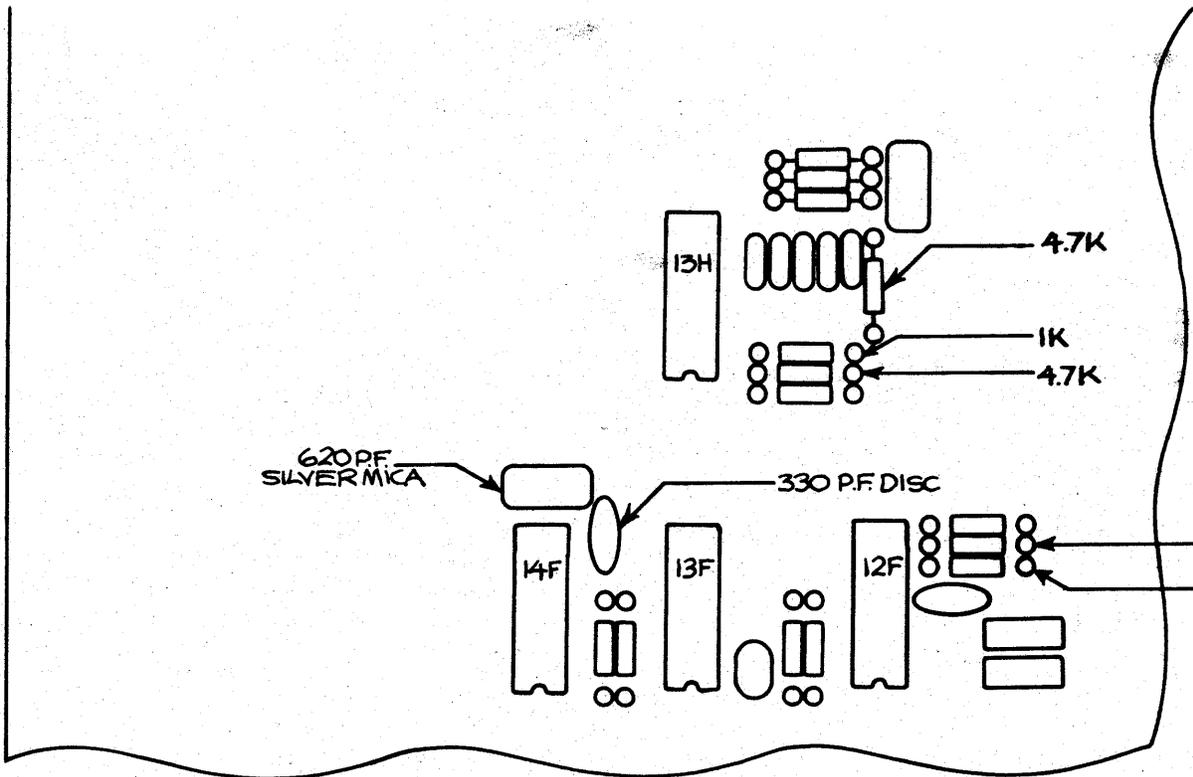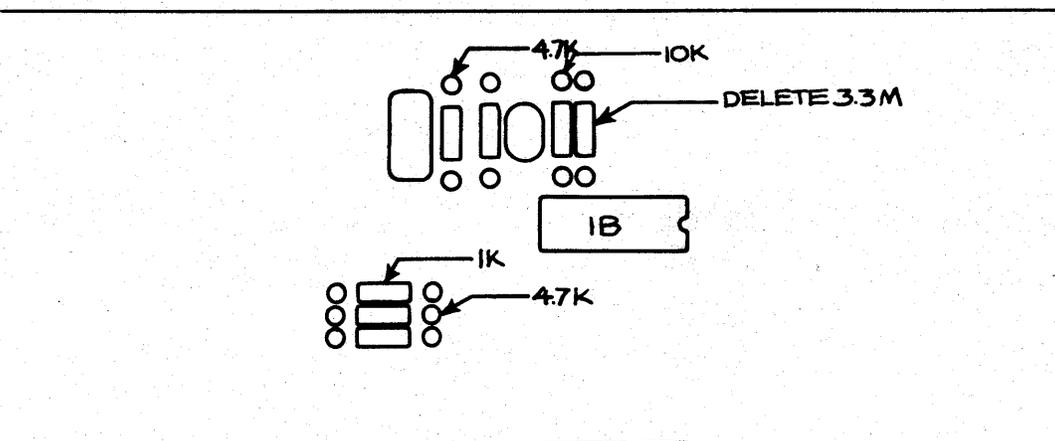   b. R43 & R55 on Sorcerer II

3. Connect the probe pin 9 of the PLL:

   a. IC 3C on the Sorcerer I.
   b. IC 14F on the Sorcerer II.

4. Hit RESET and type the following:

        SA T 0 2FFF <Carriage Return>

5. Adjust scope for a stable display.

6. The signal should range from 0 volts to minimum of
   3.5 volts Adjust VR1 within the middle 1/3 of its
   mechanical range.

7. The signal should look like Figure 2.

8. Remove jumper wire and put Sorcerer back together.

C. If problems persist do not hesitate to contact the
   Exidy Customer Service Department for further help.

            ****
            *   SPECIAL NOTE: *
            *   THIS NOTE SUPERCEDES ALL   *
            * RELATED CASSETTE INTERFACE BULLETINS   *
            ****

Figure 1: Sorcerer II

13H

620 P.F.
SILVER MICA

330 P.F. DISC

4.7K

1K

4.7K

10K

3.3M
DELETE

14F   13F   12F

Figure 2: Sorcerer I

4.7K   10K

DELETE 3.3M

1B

1K

4.7K

2C   2B

620 P.F.

3C   3B

330 P.F.

Figure 3: Valid Signals

3.5 VOLTS

OR

0V

SIGNAL 1   SIGNAL 2

Check what was
reversed
Dove → Corrected as appear. 10/1

DATA SYSTEMS DIVISION

technical notes

Subject: External interrupt handling by Sorcerer I and II from an S100 device via the 50 pin expansion connector.

Problem: If a running program is interrupted while the Z80 is operating in mode 0 and its program counter (PC) contains address xxFCH, xxFDH, xxFEH, xxFFH, the Scorcerer will in its I/O hardware section, eronously send to the S100 BUS a data bus disable signal. Consequently the interrupiting device will not be able to place the interrupt vector on the bus,and the Z80 will begin execution with a meaningless PC address resulting in a program crash.

Solution: Add the Z80 M1 control line to the I/O decode logic by performing the modification to the main logic board as described below.

1. Solder in the following jumper on the component side of the main logic P.C.B.

   Sorcerer I:

   11F-18   To   5E-11

   Sorcerer II:

   6H:12   TO   7D-1 1

REVISED

2. Make the following cut to the main logic P.C.B. printed circuit trace with an X-ACTO knife:

IC	PIN #	SIDE OF BOARD
Sorcerer I:		
5E	BETWEEN PINS 11 & 12	CIRCUIT SIDE
Sorcerer II:		
7D	BETWEEN PINS 11 & 12	CIRCUIT SIDE

REFERENCE NOTE: More information on the handling of interrupts by the Z80 processor can be found in the MOSTEX Z80 HARDWARE MANUAL or its equivelant.

technical notes

NUMBER 11
08 JAN 1981

SUBJECT: Use of 16K EPROM PACKS WITH A3 or B revision level
Sorcerer II main logic P.C.B.'s.

PROBLEM: Incorrect addressing of 16K EPROM PACKS when used
with A3 or B revision level SORCERER II main logic
P.C.B.'s. This problem will only be evident if an
EPROM PACK is loaded with 2732/2532 (4Kx8) EPROMS.

SOLUTION: Determine the revision level of the main logic P.C.B.
is A3 or B and make the modification to the board as
described below:

1. Modification to correct reversed address line to the rompac
connector.

   a. Solder in the following jumper on the circuit side of the
   main logic board. Use 30 guage wire wrap wire.

   NOTE: The rompac connector pinout is marked on the
   component side of the board. Care should be take to make
   the correct count on the circuit side of the board.

   6E-3   TO   ROMPAC CONNECTOR PIN # 22

   10A-8   TO   ROMPAC CONNECTOR PIN # 21

   6E-3   TO   4H-3

2. Make the following cuts with an X-ACTO knife to the main
logic P.C.B.:

IC	PIN #	SIDE OF P.C.B.
6E	3	CIRCUIT SIDE
10A	8	CIRCUIT SIDE
ROMPAC CONNECTOR	21	CIRCUIT SIDE

REVISED