2893

M E M O R A N D U M
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COPY TO: Craig Benson, Douglas Dobbs, Don Bynum, Wenn Lin

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SUBJECT: ALC Bus Speed for Video Peripheral

To compute the speed to update a 24 line by 80 column screen via a peripheral on the ALC bus I made certain assumptions which may or may not be valid depending on the hardware implementation. I developed the numbers for a peripheral using a 7000 processor, I/O bus interface chip, and directly accessable RAM. If the RAM is not directly accessable then the transfer will be somewhat (but probably not drastically) slower. The data transfer takes 175 clocks per byte which translates to time according to the following table.

External Clock Speed	Clock Time	Time per byte	Time for 1920 bytes
5 MHz	400 ns	70.0 us	134.4 ms
8 MHz	250 ns	43.8 us	84.0 ms

This shows that the screen can be updated in about 1/10 of a second if the data transfer is paced by the processor in the peripheral. That should be the case with the 9995 in the master device but is again dependent on the hardware design. Perhaps Wenn Lin can provide the code times for the console. If so, I would like to review the code sequence. The 7000 code sequence for the data transfer follows:

```
RCV   BTJZP  %>02,STAT,GONE     SEE IF BAV GONE
      BTJZP  %>08,STAT,RCV      WAIT FOR HSK IF SLOW
      MOVP   %>01,CTL           RESET BUS INTERFACE
      MOVP   DATA,A             GET DATA NIBBLE
      MOVP   %>00,CTL           RELEASE HANDSHAKE
      AND    %>0F,A             MASK OFF TRASH
RCV2  BTJZP  %>02,STAT,GONE     SEE IF BAV GONE
      BTJZP  %>08,STAT,RCV2     WAIT FOR HSK IF SLOW
      MOVP   %>01,CTL           RESET BUS INTERFACE
      MOVP   DATA,B             GET DATA NIBBLE
      MOVP   %>00,CTL           RELEASE HANDSHAKE
      AND    %>0F,B             MASK OFF TRASH
```

```
SWAP   B
OR     B,A          PUT NIBBLES TOGETHER
STA    *PTR         STORE IN CHARACTER
DECD   PTR          MOVE POINTER
DECD   COUNT        COUNT DOWN
JC     RCV          LOOP IF NO COUNT
```

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