MEMORANDUM   --   28 August 1992

To: John Lohmeyer, Chairman, X3T9.2

Copy: Larry Lamers, Secretary, X3T9.2

From: Bill Spence, ENDL Consulting

Subject: Terminator and Driver Characteristics

At the Bellevue meeting, Tuesday afternoon 18 August, we worked with a diagram I had developed showing how various driver and terminator characteristics and various driver limits all relate with one another. It was suggested that it would be appropriate for this diagram to be captured in the official papers of the committee. Accordingly, I am submitting herewith a formal presentation of this material, for inclusion in the September mailing.

Figure 22 presents the voltage-current characteristics of single-ended SCSI terminators and drivers. It is a fairly complex diagram which rewards careful study. Features are as follows:

- The characteristic of the original 220/330 ohm terminator, assuming a nominal TERMPWR voltage of 4.5 volts. The parallel dashed characteristic to the left shows the effect of the TERMPWR voltage dropping to 4.0 v.

- The characteristic of the Boulay terminator, sourcing a full 24 ma at its intersection with the characteristic of the assertion driver and sinking about 2 ma at its intersection with the characteristic of the negation driver.

- The characteristic of the original FPT terminator, assuming a nominal TERMPWR voltage of about 4.7v, sourcing about 30 ma at its intersection with the characteristic of the assertion driver and sinking about 1 ma at its intersection with the characteristic of the negation driver.

- The so-called "ideal" terminator characteristic, sourcing 24 ma to the signal line whenever the voltage is below 2.5 volts, also sourcing additional current to clamp the signal from going below 0.1 volt.

- The median characteristic of an assertion driver in the asserted state, together with the production limits thereof (dashed lines).*

- The median characteristic of an active-negation driver in the negated state, together with the production limits thereof (dashed lines).*

- The upper limit on assertion driver voltage when sinking 48 ma (point A).

- The lower limit on active-negation driver voltage when sourcing 7 ma (point B).**

- The upper limit on active-negation driver voltage when sourcing 7 ma (point C).**

- The upper limit on active-negation driver voltage when sourcing 20 ma (point D).**

 *   Taken from data published by NCR.
**   Taken from the SCSI-3 Parallel Interface Draft Standard Rev 7.
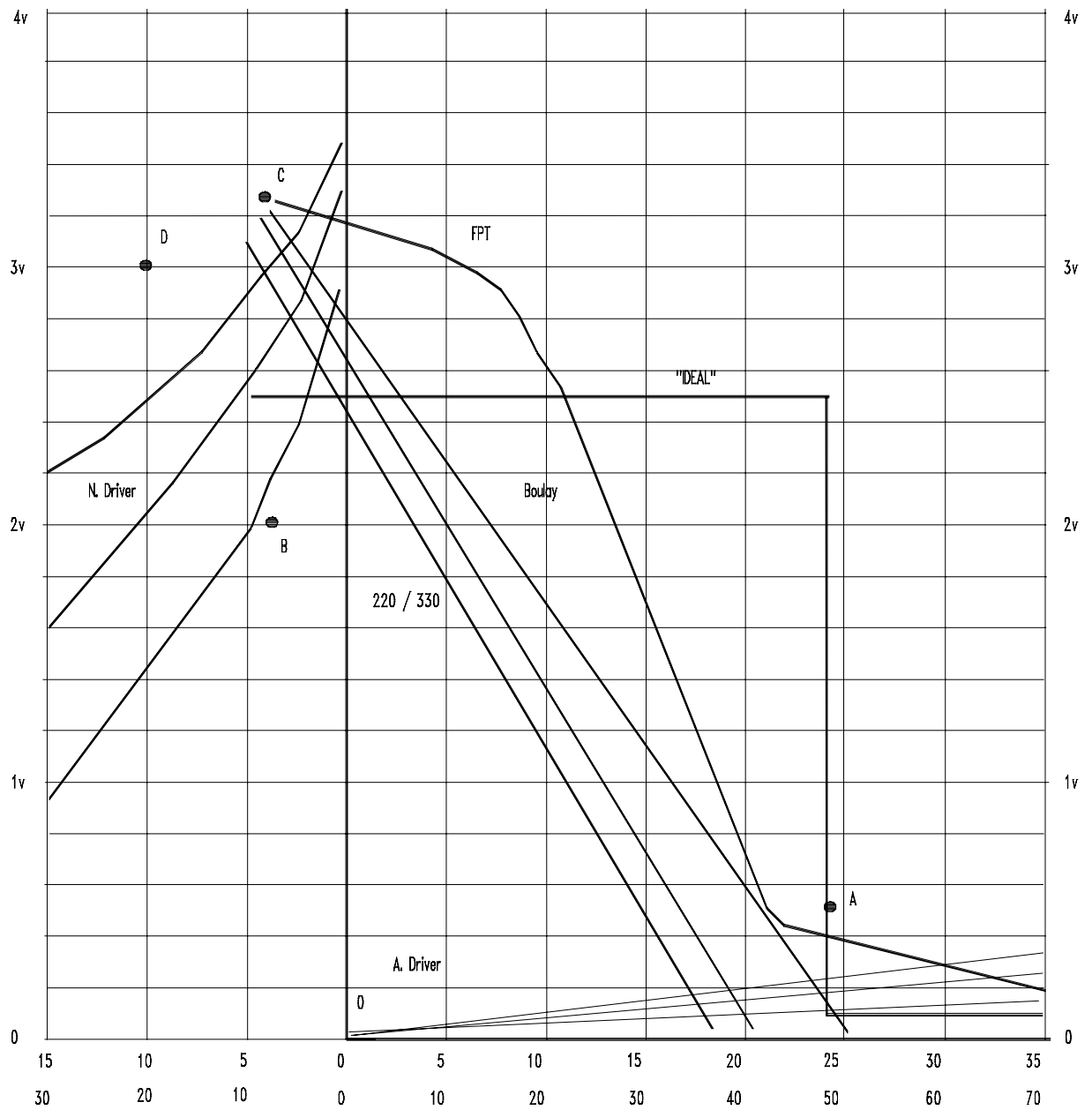
FIGURE 22. SINGLE—ENDED V—I CHARACTERISTICS