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GSD Los Gatos Laboratory
October 10, 1973

MEMORANDUM TO: File

SUBJECT: Calico Keyboard for SCAMP I Project

The following presents the terms of agreements made with the Calico Keyboard group for the development of a Calico keyboard for the SCAMP project and for the preparation and delivery of the first six models. In addition, many of the background considerations involved in reaching these agreements are presented to both illuminate the decisions and hopefully to justify them.

The substance of the agreements reached to date are as follows: the Calico group will develop a new keyboard to conform to the attached keyboard layout (Figures 1 & 2) and the design criterial established below and carry the same through to and including release to manufacturing. Their tentative schedule is as follows:

6 Models 1/25/74 Existing Technology

A/B Test 3/31/74 Final Technology
(possibly including
a new Dutchess module)
and REL approved.

B/C Test 7,8/74

Total 1974 Build 500 keyboards.

The development cost is given as \$17,000 and the cost for each of the six development models will be \$1,500. The reasons for the high development cost cited by Mr. P. E. Wood, Manager of the Calico Development group, include the extremely high cost for computer usage at the Raleigh site (up to six or eight hundred dollars per hour in some cases) and the high cost for use of wet line facilities at Raleigh. Mr. Wood also suggested that slow turnaround in the wet line facility contributed a great deal to the rather slow turnaround in obtaining the first six developmental models. An investigation is now under way to determine the feasibility of using wet line facilities at other locations to both reduce cost and turnaround time. Although costs are somewhat higher than anticipated and model delivery dates

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are later than desired, it would appear that the group will be able to deliver keyboards that will meet our space limitations (15" x 6", possible 6 1/8", outside measure), our desired configuration and they should be able to substantially reduce the weight of the unit.

The following presents preliminary design and interface specifications for the new SCAMP I Calico Keyboard.

The electrical characteristics of the keyboard will be approximately as follows:

I. Code:

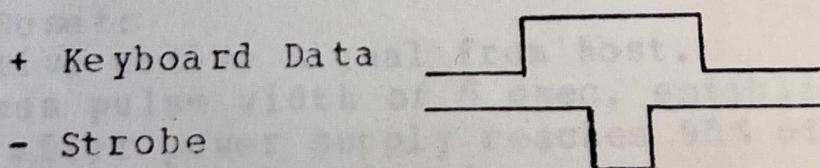
- A. Scan Code
- B. Function Bit for Attention and Alter Control Keys
- C. Shift Bit for Shift Key

II. Keyboard Data Bus:

- A. Bits will be positive active (8 lines)
- B. The bus will be gated by a signal from the host
- C. The bus will be driven with open-collector TTL, Dutchess Logic
- D. Positive odd parity will be provided

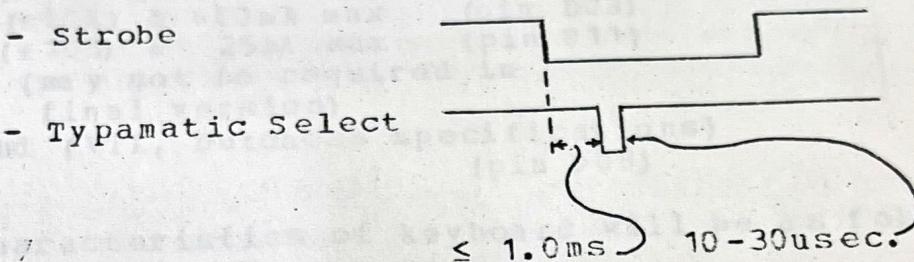
III. Keyboard Strobe:

- A. Negative Active
- B. Time relationship with data as follows:



IV. Typamatic Function:

- A. Typamatic keys will be detected by the processor
- B. The typamatic select line returned to the keyboard will be negative active
- C. Timing relationship between the strobe and typamatic select line will be as follows:



- D. The keyboard will contain the typamatic delay and rate logic
- E. Typamatic delay will be nominally .6 sec (.3 to 1.0 seconds)
- F. Typamatic rate will be 10 Hz nominal (8-12 Hz)

V. Keyboard Lockout:

- A. Negative active signal from host.
- B. The strobe will be inhibited on all keys except the Attention and Alter keys which will remain active.

VI. Power-On-Reset:

- A. Negative active signal from host.
- B. Minimum pulse width of 5 usec. establish after power supply reaches 90% of final voltage level.

VII. Loading of interface signals will be one VTL/Dutchess load (negotiable)

VIII. A 2-key rollover function will be provided by the keyboard

IX. Connection to keyboard will be via an SLT connector located on the righthand side of the keyboard

X. Power Supply requirements:

A. +5V ($\pm 10\%$) @ 600mA max (pin D03)

B. +8V ($\pm 10\%$) @ 25mA max (pin B11)
(may not be required in final version)

C. Ground (VTL, Dutchess specifications)
(pin D08)

The Physical characteristics of keyboard will be as follows:

I. Maximum size: 15" x 6 1/8" x 2 1/4"

II. Weight: under 5 lbs. (Studies now under way will determine whether plastics or other materials might be usable as keyboard backing and key cover plate.)

III. Key colors: caramel and chocolate (to displace the present gray and charcoal) with white lettering. The gray and charcoal colors will probably be used on the first units.

IV. Keyboard configurations:

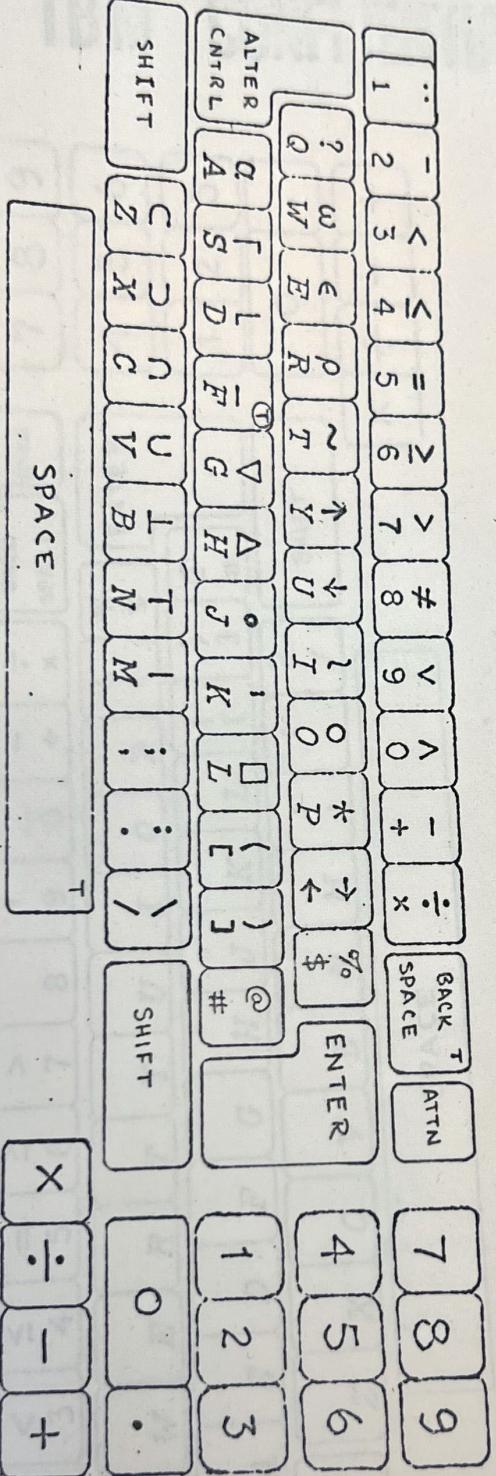
The first six models will have the APL configuration shown in Figure 1. By changing key tops this configuration may be changed to the BASIC configuration shown in Figure 2. In manufacturing, the switch from the APL to BASIC key tops is a relatively simple process. A consideration in the present BASIC keyboard layout is conformance with ASCII standards for character positioning. The Government Services Administration presently requires this conformance by Presidential edict.

V. Environment:

The keyboard will be built for use in a class "C" environment. Along this line seals may be provided if desired to protect the keyboard from possible liquid spills.

As a next step in our interaction with the Calico development group, they will present us with Phase "0" type product cost estimates for a VTL logic keyboard and for a keyboard using a new Dutchess module designed in Raleigh for our keyboard. It would appear at this point that the new Dutchess module would provide a less expensive solution to the logic requirements for the keyboard. In terms of card real estate and wirability, the Dutchess module also provides a nicer solution. The major difficulty with the new Dutchess design will be the initial outlay of approximately \$20,000 required prior to the initiation of their design.

PROPOSED SCAMP I
KEYBOARD
MOD II (APL)



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PROPOSED SCAMP I MOD I KEYBOARD
(BASIC KEYBOARD)

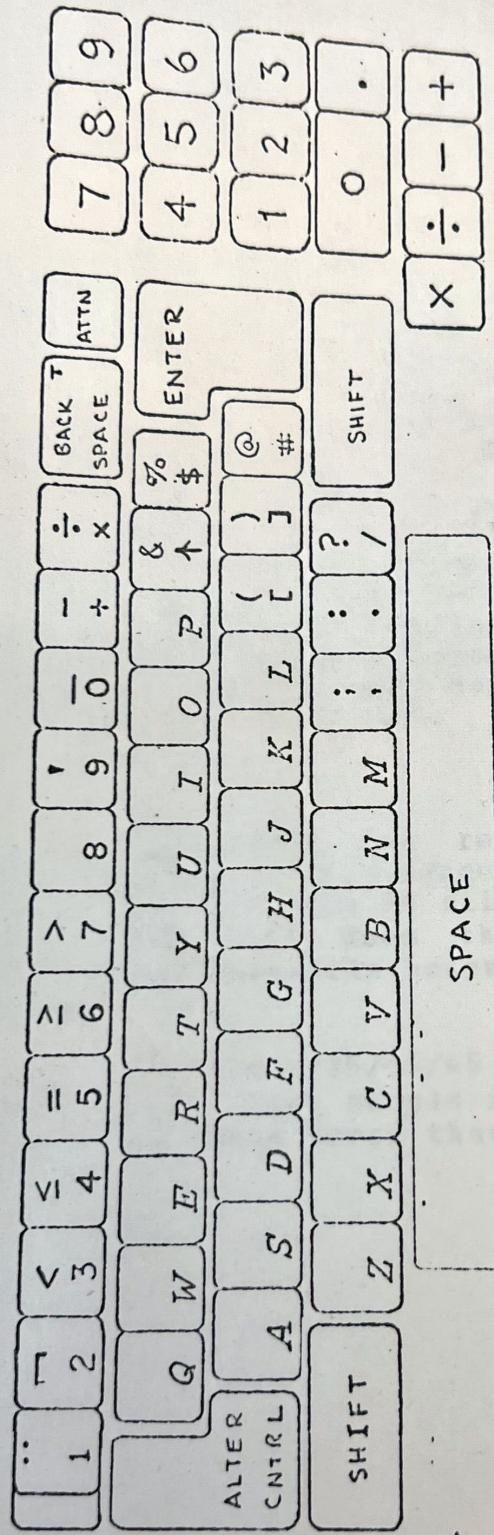


Figure 2

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