

1 July 1979

Dear Bruce

This has been started several times but never finished before events made it obsolete and I also wanted something positive or at least definite to report. These last two weeks of the PIII have been at a pace which I never plan to repeat.

Let me try to thank you and Mary for the hospitality. It was most kind and most appreciated.

PIII: On the positive side by rigorously following details learned through many failures + cut + try, it appears to work in the 1979. Be sure Dave S. runs multiple full loads of data on the computer from real people before he releases it. If the 1979 had a decent write out and a couple more programs it wouldn't be a bad clinical. I am sending one of the PIII's back tomorrow but want to keep both the others for about 10 days more to work out our problems in a computer SW. It will work in one but not both.

The 660 finally called. I completely was restored but the SWP function will still work only at 60X + a SWP was designed to work at 120X, the only speed acceptable to the early units. In short we have to sort this out + debug the PIII SW program before we can run anything. Spent 3 days + nights on this alone + SWRP have been hurt also.

Much of this is pretty dated but I have to have something

Spent a lot of time gathering ungarbled information on the direct use of the RS 80 BASIC program. There are sufficient differences in all BASIC programs to prevent their direct interchange. I was told otherwise by SWRI at the start of the program but this was their lack of experience c the RS program. Conversely as you are learning it was a ^{quick} cheap way to start and last December you had a tested working system to copy which took less than 3 mos to do.

As far as I can determine from all programmers & engineers, all of whom were questioned in detail, once a person starts from scratch ^(as David did) with the RS-80 program there are only two problems in its use.

1) minor C.T driver changes are needed

2) proprietary questions c RS i.e. it is simply a program choice by the engineer. The second approach circumventing these problems is to compiler modify the RS BASIC to another & for curiosity I am getting a quote on this. Your problems were that you put one good man on a job requiring 3 (engineer, technician & programmer) and he then elected to redesign both H/W ^{or} S/W completely and at the same time you invoked the usual DM secrecy including no hint of problems to the original developer. How often has this happened? I can count at least 10 major developments of mine treated similarly, most of which died an undeserved death, all of which were delayed and

all of which cost us both. It's probably the most frustrating feature of working c DMA. It's no good complaining something doesn't work when you take a wheel someone develops, reinvent it & then complain because your engineers made it square. Had the problem been brought up in a timely fashion the odds are I could have gotten SWR¹ to translate it for free - and I'll bet Dave still wouldn't have used it!

Bruce things are probably going to get tougher & I stand ready to help any way possible. You are operating c several chronic, serious problems. One of these is secrecy. The problems c our P111-TR5 80 interface results from almost total ignorance of the P111. SWR¹ considers it black magic & even the data^{we} were provided contained an error which cost \$2000 in wasted labor. Wallace is paying \$4000 out of pocket to have^{ce} the 660 H/W interface error corrected, an error^{also} from total lack of information on the 660/671. At that time your engineers treated me like a spy. If you don't know me after 25 years & all that --- This H/W error produced H/R errors which we thought we could accept but which c more experience became intolerable*. The B/P accuracy of P111-111 is exceptional - once your engineers finally accepted the reality of a systolic error after a year of begging.

* We have to rerun all our⁶⁶⁰ tapes because of it.

Your most serious problem is design philosophy - have the only equipment to do a job, make it complex and expensive as the market will bear and make the market bear all expenses. Again & again I was struck by the complexity of circuit & other design over the past two weeks. No wonder you have such production, quality control & maintenance problems. One definition of an engineer - and a good definition - is someone who can do for \$5 what anyone can do for a hundred.

Another major problem area is lack of adequate ~~field~~ development & field test before building & selling gear. Your philosophy has been to let the market bear this expense. This is false economy for it is both expensive & very slow to say nothing of the damage to reputation. First of all your engineers won't listen - even to problems. Your ultimate insult to me was to offer to send MAC "to show us how to use the equipment" - equipment & flaws which MAC couldn't even spell! Selling a half finished piece of gear & fixing it later is not the answer. How on earth do you stand these repeated "production designs?" I will not burden you & the expenses Wallace & I have encountered in finding out how to prevent the 1979 dumping the P-11 program - i.e. everyone loses on these deals & it's unnecessary.

I know I am right on the following -

1. I must & listen to & share information with the people you choose to work with
2. Do adequate development & test in DMA & especially in the field - before ^{production} expensive
3. Do one good simple, reliable, pre production prototype design & test it well in the field
4. Buy if possible & build what you have to as regard simple reliable production units
5. Sell low enough to discourage competition when it appears & support all your gear -

If you do this & your instinct for new development you can't fail to continue your success but the ~~secretive~~ secretive, complex, bells and whistles philosophy may be another story if the times change -

Again thanks and let me know anything I can do to help (you're probably thinking "quit bitching" but I wouldn't have spent a Sunday evening writing this if I weren't concerned). The papers are in full swing but ~~and~~ I had the choice of drum beating or giving you & the profession another product 2-3 years earlier than normal -

Best regards & to Mary -

Mary & I must have traded sports show literature for I have her Springer book & will return separately -

Bill