

Notes on the back story of this letter:

This was John McGechie's reply to my very first letter to him (*1979-12-01 - Letter from VA to John McGechie - 070583-84.pdf*), where I unashamedly asked him zillions of questions, as an interested but total newcomer to the HP calc scene was bound to do.

Now, admittedly, his handwriting takes some time to decipher but believe me, it can be done and the rewards are worth it. In these 6 pages he gives me a primer to *NNN*'s, 41C *status registers* and *synthetics*, plus an enrollment form to join *PPC*. What more can one ask for ?

We kept on exchanging many extremely interesting letters (at least his) on all hot topics back then, from synthetics to scoops of new 41C peripherals and new machines (*Capricorn*), plus lots of routines, full programs and even whole programming projects such as his pet one, a full-fledged word processor (!!) for the 41C.

He was so incredibly kind towards me and so eager to communicate with me and keep me informed of everything that was cooking up down under that eventually I decided to switch and began to send all my materials firstly of all to the Australian *PPC Melbourne Chapter*, where they were very well received, commented by most everyone and promptly published in their club magazine, *PPC Technical Notes*.*

That was so unlike my experience with *PPC* proper, where I would send many fond, friendly letters to Mr. Nelson, which he *never* replied to, not once, and also many good-quality materials that went mostly unpublished without explanation or rationale of any kind, leaving me waiting many months for their publication and ultimately wondering what went wrong.

In time, I became a proud member of the *PPC Melbourne Chapter*, despite the sizable distance between Madrid (Spain) and Melbourne (Australia), i.e.: some 20,000 km, give or take a thousand, and this present reply letter of John McGechie was the one that started it all.

May he rest in peace.

* Matter of fact, *HP* took notice of some of the programs I sent to *PPC Melbourne Chapter* and asked me to please submit one of them to the *HP User's Library* (which I promptly did) and even included *another* one in their *HP-41 Users' Library Solutions - Games II.*, sending me free copies of it all.



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19th December 1979

Dear Vallentin,

Pleasant to receive your interesting letter —
despite the thousands of questions you ask! This is
a quick reply to get you started.

First — congratulations — you have found out
how to read out the sub-routine stack of the
HP-67! That, by the way, was the clue that
set PPC on the NNN road to limited
alpha-numeric displays on the HP-67/97. I will
enclose a PC of John Martellaro's excellent
beginners article on NNN phrases etc on the
HP-67/97. The very best thing you could do —
though that doesn't mean I won't do my best
to help at this distance — is to join the PPC
Club. It's US \$26 per year — the most
valuable return for investment you could
make!

I'll tackle some of your questions — a few
of them would take 20 pages to deal with
properly.

You can make (limited) NNNs on the HP-25
too — a bewildering variety of them — by
the way NNN's are the clue to the HP-41c also.
There are well over 1000 (yes, One thousand)
'hidden' instructions in the HP-41c, many
very useful indeed. I've written programs

I will pass on details of your interests, etc
to our local members — they may like
to exchange programs etc with you.

for it that's wrote programs to replace themselves etc. Your NNN on the 67 is of the form

~~0/052 F 52 F 52 F /00~~

0/052 F 52 F 52 F /00

I would guess (from memory - don't have my notes here) Yes, a count down timer. Try multiplying it by itself, divide it by the resulting digit sequence -- 2.5 -- and have a 1 in the mantissa with 2 leading zeroes. Multiply it by 10^2 to have an NNN displaying in Fix mode as 001.0000000. As a divisor this will truncate the 2 left hand digits of a number. E.g. $987654321.\phi \div 001.\phi$ is 7654321. ϕ etc. 01.0000 - truncates one LH digit etc.

Yes - a difficult way to produce words.

Block 3 etc. The program pointer of the HP-67 can be put in the secondary registers - keying in steps in program puts hexadecimal digits in the secondary registers. $P \geq S$, and you can recall them to display.

Access - by a power interrupt to the HP-67 supply. It puts a hex, non standard value into the pointer register. The Block 0, Block 3 jargon was an early, convenient labelling method that stuck. John Martellaro describes how to make a Black Box to do this. There is another way, but it involves opening up the 67 to put in a switch - etc. (That's the Phase 3 interrupt)

I think this works -
but you can make the
right NNN with the
right Black Box.

Have they any application? Word prompts, like those of the 41c, and with the HP-47, full control of the printer to print histograms, or plots of functions, etc. I suspect that those two applications, at least, spurred HP in the development of the 41c features.

There are 5 'unused' codes on the 67. They can be keyed into program by multiple key pressing - again, that's in Tom's article. Ghost key's? Pressing 3 keys on most calculators enters unintended instruction codes to the microprocessor and its ROM(s) which sometimes do something useful. You can make the truncating NNNs on the HP-45 that way.

'All the NNNs in Block 0"

Data and program are stored in registers. On the 67 each instruction occupies 2 digits of a 7 digit register. (See the first, introductory note of mine.) Each digit can assume any value from 0 to 15 - or 0 - 9, A - F. A digit is 4 binary bits - D is 0000, 1 is 0001, 2 is 0010 etc. 9 is 1001, 10 or A is 1010, up to F which is 1111.

So 16×16 possible instructions.

A register of program can contain

This is 67/91
only. The
41c is more
complex

14 digits, or 7 bytes - & 2 digits, 8 bits.

Each Byte is an instruction.

R/S is (0000)0000

67
only

Look at a register of program with RCL 01, LBL 0 GSB i, 5, STO 7, RTN, R/S in it: These are the hexadecimal (base 16) digits

23	12	11	10	9	8	7	6	5	4	3	2	1	0
7	1	F	0	B	F	1	5	9	7	0	E	0	0
RCL 01	LBL 0	GSB i	1	5	STO 7	RTN	R/S						

As a storage, number register, this would display oddly - unsure, but rather like

- 1. 0C 1597

A B C D E F on the 67 97 and the 19c are + C o d E ad blank.

All such sequences are NNNs.

So - there are some answers for you - hope it helps?

No - no letters from Spain, but I correspond on calculators - doing logic (my programming specialty) with friends in the USA, Germany, Italy. Now I have another interesting person in Europe!

I see you know the 34c - an excellent machine.

If I can help in any other way, please don't hesitate to ask. Yes, curious about Capricorn - rumors that it gets released in the US as HP 85A early next year.

\$ 3½ thousand US.

We have a large users group very active here - a chapter of PPC.

But - I enclose an enrollment form for the Club. Write to Richard Nelson, send your \$26 and get the 1977-79 back issues of PPC Journal. Wonderful stuff there you will burst trying to read all at once. (Most do when they get it.)

As a small temptation.

999 or RCL IND on the 41c recalls (and normalises) the 25th register (Bytes 169 to 175) of the 41c program memory. 9BD recalls Bytes 1 to 7. 9BC recalls bytes 8 - 14 etc.

Tempting? Do you want to recall the 7 ^{right-}~~left~~ most bytes of the alpha register? Key in 999, enter, 1.9075 9175, STO IND //

1.90769176 1.90779177 1.90789178 1.90799179	RCL N, STO N RCL O, STO O RCL P, STO P RCL Q, STO Q	Alpha Alpha Alpha Alpha
		<small>Scratch register + 3 bytes Alpha</small>

On a packed program of 175 + instructions.
 See ϕ , $RCL M$, $STO M$ at lines 169, 170, 171. SST on these with seven ? in alpha and see in X
 $- \phi.1\phi\phi\phi\phi\phi\phi\phi\% \quad i F1x9$

That's an NNN? It is, in fact

$3/F \ 3 \ F \ 3 \ F \ 3 \ F \ 3 \ F /F /3 \ F$

Try it on 6 spaces and see

$\phi \ 2 \ \phi. \ 2 \phi \ 2 \phi \ 2 \quad 18$

Try it on 4 '=' signs in alpha - see
leading blanks in X and

$\$ \ \$ \ \$ \ \$ - 19$

with no decimal point!

STORE IN R_{00} , RCL 00 and see

$\phi. \phi\phi\phi\phi\phi\phi \ \phi\phi$

Gone!!!

etc etc.

There are 16 'status' registers + the 64 user registers in the 41c.

There are RCL, STO, STO-, STO+, STOx, STO IND, RCL IND, --- on all 16 - not just on 5 of them -

X Y Z T ad Lst X.

etc.

Curious?

Regards

John McG.
(J.E. McGeehan)

RCL T
STO Z
STO- Y
X < > L
X < > e
X < > 0
Σ REG a
etc.

There are altogether
128
TONES
on the 41c.