May 4, 1966

To: F. J. Corbato

Subject: Recommended Strategy for Using 1401 Extended
           Character-Set Printer.

Art Evans has, I think, hit upon the right approach
(see his memo to me, attached) with respect to achieving
early and easy use of the "long-chain" 1401 printer.

I am ready to recommend the following:

1) Write a new 7094 program (Art's "ASCII EDITOR")
which will "look through" all (or selected) U.F.D.'s
for ASCII print requests. It will then write the
requested output on a tape using existing tape-
strategy capability. (Point: achieves compatibility
with MULTICS "early file system" tapes.)

     Tom Van Vleck and Noel Morris in some combination
will do the work. (I don't believe, on principle, the
estimate of two hours' work.)

2) Write a new, stand-alone 1401 program to accept
the above-described tape and print it on the long-
chain printer.

     Execution by the same people. Again, five hours
seems optimistic. Also, 1401 core size may be a prob-
lem, although first guesses say not.

If we wish to do anything fancy later (heaven forbid),
none of the foregoing restricts us.

                                        R. G. Mills

RGM/tlb
cc: Messrs. Saltzer, Evans, Van Vleck

To: Dick Mills

From: Art Evans

Subject: The Extended Character ~~Change~~ *Chain* for the 1401

Date: 4 May 1966

As I understand the issues, the object is to implement with the least
disturbance to the system the ~~use of the~~ new print chain on the 1401.
I add the additional assumption that the main purpose *in* having the chain
is to facilitate Multics development and that making it available to the
general users is only a peripheral advantage. Further, it is clear that
any changes made must not interfere with the operation of the center at
all and should interfere with the operation at MAC as little as possible.
Finally, ~~a minimum of~~ *the* programming effort to implement the change ~~is desirable~~ *should be small.*
With these considerations in mind, then, I propose the following:

A program is to be written which I will call the ASCII EDITOR . This
program would have to be run by a user with a tape quota. It would "know
about" a list of users who are entitled to have ASCII programs printed off-
line. (These users would be the Multics group and any others to whom *we management*
wished to offer this privilege.) The ASCII EDITOR would look in these file
directories for a file with some particular name -- say, ASCII RQUEST.
This file would contain, in some suitable format, a list of requests for
ASCII files to be printed off-line. The ASCII EDITOR would create a tape
in the standard tape strategy format containing these files.

To make this work smoothly, the ASCII EDITOR would be run as a *FIB*
job which would reschedule itself to run periodically, with some period to
be determined. Presumably, it would have a problem number of its own and
could keep its list of "privileged users" in a file in its own file directory.
(Other schemes could be used to pass out the privilege. For example:
Privileged users could be permitted a write-only link to ~~the~~ request file
and given a convenient technique to append their requests to it. An
imaginative programmer can surely think up other possible strategies.)

Several advantages are apparant. Stan Dunten has informed me that
the first file system which will be operational on Multics will create tapes
which are compatible with tape strategy tapes. This provides a powerful
incentive to us to use that format for this purpose. Clearly, this proposal
disturbs the Center not at all and the MAC operations a minimum amount.
(The Center will never know about it.) Finally, the effort to implement
this proposal seems minimal.

I have discussed this matter with Tom Van Vleck. He estimates that
the 1401 program needed will take approximately 5 hours to write. He
estimates that the ASCII EDITOR will take about 2 hours. (These estimates
are based on the works being done by an experienced coder -- himself or
perhaps Noel Morris.) As an alternative, Tom estimates that modifying the
present disk editor to process ASCII requests by saving them up and then

creating a tape at the end of the run would take about 5 hours.

There has been doubt expressed about the possibility of writing the needed 1401 program. Clearly, the 1401 ~~quota~~ core will be squeezed quite tightly to be able to read in a 432 word record and still have the conversion table. Tom has assured me that he can write such a routine and I am inclined to believe him.

copy: Tom Van Vleck