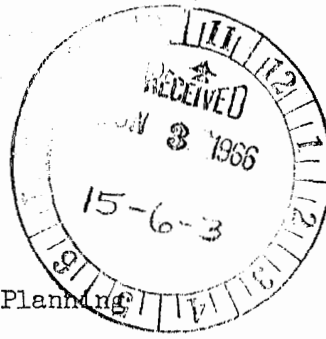


UNITED STATES GOVERNMENT

# Memorandum



C. Merrin  
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TO : See list below

DATE: MAY 31 1966

FROM : FML/Assistant Chief, Mission Planning  
and Analysis Division

66-FML-68

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SUBJECT: Apollo spacecraft computer program development newsletter

There are a number of us who feel that the computer programs for the Apollo spacecraft will soon become the most pacing item for the Apollo flights. This is certainly likely to be the case for AS-207/208, by which time spacecraft, and booster delivery and Cape operations are likely to have become relatively routine, with the shots going pretty much on schedule, and we working on the computer program development will still be "sloshing through the mud." In an attempt to improve this situation--I hope improve--I have started to go to MIT a couple of days every week to provide coordination between MIT and MSC. This memorandum is the first of a series, I will be dispatching to briefly inform you on what is going on.

During the week of May 16, we put primary emphasis on management matters. During that week, MIT put into effect a new Computer Program Development organization. Basically, what they have done is to put Dr. Battin in charge of all computer programming, with four organizational units reporting to him. These units are headed by M E. Copps, Mr. N. Sears, M J. Dahlen, and M J. Nevins. I still do not have a clear understanding of how their work is broken out between the four units; however, it is my understanding that M Copps has been made responsible for program development; that is, the integration of the various program routines into a complete system, testing of that system through release of the ropes. In addition, they indicated that they have been authorized by MIT, and intend, to build up their program development staff with the intention of carrying on program development beyond AS-504. You will recall that there has been some hesitancy on their part to augment their staff since they felt they would be phasing out, but apparently they have reached a management decision that they will not phase out; and, accordingly, they are willing to hire more people, perhaps augmenting their staff by as many as fifty new people.

By some stroke of luck, Lyn Dunseith and I took Dick Hanrahan of IBM to MIT that week to give them a briefing of our Program Development Plan, the management technique which we implemented about a year ago with IBM for the MCC/RTCC, which has enabled us to know the current status of the programs as they develop, to identify where our problem areas were and to evaluate quickly and accurately whether program changes could be made without schedule impact. Dick gave an excellent informal briefing of this technique, which has served both IBM and

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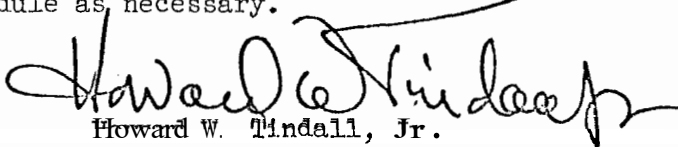
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NASA wonderfully, and I hope and expect Mr Crapps will draw heavily on this experience in setting up a similar system at MIT. We have offered every assistance to him in this matter.

I am still very concerned about unnecessary sophistication in the program and the effect of this "frosting on the cake" on schedule and storage. It is our intention to go through the entire program, eliminating as much of this sort of thing as possible. I am talking about complete routines, such as "Computer Self-checks", as well as little features, such as including the third and fourth harmonics of the earth's oblateness and drag in programs for the lunar mission.

We also intend to maintain tight program control over MIT regarding modifications of the AS-504 program for the AS-207/208. It shall be based on the principle that change shall not be made unless absolutely mandatory. Mandatory items are defined as those without which the system absolutely **will** not work. It does not include such things as adding earth's oblateness effects into the lunar rendezvous guidance programs, even though failing to include these effects **will** cause propulsion fuel to be wasted due to guidance errors. We **will** find out what the cost of flying with a program like this is, and let you know. If it is too expensive, we **will** make the necessary program changes, but only after readjusting the delivery schedule as necessary.

  
Howard W. Tindall, Jr.

Addressees:  
(See attached list)

66-FM1-68

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