

The Washington Post article was a quotation taken from the Apollo News Media symposium which was held at MSC Houston, December 15 and 16, 1966. The statement represented a small portion of a more comprehensive discussion. This discussion which places the statement in context is as follows:

"Those subsystems, not the ones that are going to fly but the ones like the ones that are going to fly, are put through a series of qualification tests, which involve, to the best of our ability to estimate environments, the environments that the hardware is going to see, either singly or combined. And we have invested a fair amount in facilities around the country to improve our ability to do that kind of environmental testing. You see a whole bunch of them here, you see them at White Sands, you see them at Mississippi, you see them at the Cape, and you see them at the contractor plants. We also, in addition to the subsystem testing, we do testing at the system level. Now, whether we like it or not, that testing frequently shows up problems, a surprising large number of problems. To give you some idea of the magnitude of this, we keep book on every failure that occurs in the program. The inspector that notes the failure and the engineer that sees the failure has to fill out a form. That form goes into the data processing system so that we can trace the failures. The reason we are doing this isn't so much to keep book, because we believe that the way we are going to get reliability in the system is by rooting out the failure. In other words, take every failure, force somebody competent to understand it and take whatever corrective action is necessary to remove that as a possible cause of failure. But through the Block I program, on the command service module alone, we have logged something like 20,000 of these kind of failures. That is a relatively large number of things. All of them aren't hard failures, some of them are failures associated with something being out of specification, and we then have the problem of judging literally how good is good enough? If you think of the world of failures, you can break it into these two parts, those that obviously have to be fixed, and those that represent, for instance, a piece of instrumentation being out of spec by a few percent."

In examination of these failures, it was found that the number 20,000 more accurately represented the failures at that time in all of the Apollo spacecraft. The comparable number for the CSM alone was 15,100.

As mentioned in the testimony, the complexities between Apollo, Gemini and Mercury must be considered in using this type of data and on this basis Apollo represents a significant improvement over the Gemini and Mercury programs. For example, on the CSM, 21,600 drawings of parts and assemblies are required for the 1,500,000 parts as compared with 6,100 drawing for 268,000 parts on Gemini.

Mr. FULTON. I would like to have listed in the record these companies who have a high rating on meeting time deadlines, qualification tests, and conforming to the programming that you have set out and, if you will, I would like to have the major deadlines the companies have not met so that some other means that have not been devised yet may provide for that.

(The information requested follows:)

The complexities of the Apollo project, design and fabrication, support to the contractors by NASA advancement in the state of the art, etc., makes a comparative rating of companies subjective rather than objective.

For purposes of incentive fee settlement, we do rate the contractors in terms of performance, cost and schedule. The relationship of these three factors varies from contractor to contractor depending upon our judgment of the difficulty the contractor will experience in meeting the milestones for performance, cost and schedule.

Additionally, we assess each major hardware element to determine the status at various times throughout the development cycle. These ratings have been provided the Subcommittee on NASA Oversight for use in their study of the Apollo Program Pace and Progress in 1965 and 1966, respectively.

Enclosed as attachment No. 1 is the status of hardware provided the Subcommittee on NASA Oversight on July 10, 1966. This data is organized to reflect the hardware status and in meeting the major MSF Apollo milestones that is, first unmanned Saturn IB

first manned Saturn IB

first manned Lunar Configuration Spacecraft

first manned Saturn V Apollo Lunar Landing