

operations and the flight crew for 204 did early in the checkout procedure raise some questions about the quality of that spacecraft.

Those questions were answered, corrective measures were taken, and before the spacecraft left the factory, they were completely satisfied that this spacecraft was as good as any spacecraft they have had experience with and that was their personal opinion.

We continued that as we got down to the cape and they continued to hold that opinion so that they had no doubt about the flight-worthiness of the spacecraft itself during the course of the checkout operation.

I think as we had earlier in Gemini, there were working problems and there are still problems in getting the simulators up to full operational capacity. In the early Gemini flights we had some problems in getting the simulators into the final flight configurations. The reason is that the simulators have to follow the flight hardware in a development cycle so they are several months behind in the flight hardware configurations in the course of the development cycles.

Also in the case of the Apollo program, we have taken advantage of what we learned in the Gemini and we have considerably more sophisticated simulated training equipment, and it has to be, because we are trying to develop here the capability of carrying out the lunar landing.

So there is a more sophisticated training equipment that is now in operation and was in operation during the course of the last several months of the Apollo training cycle. I think that again this problem has been solved.

First you have to recognize that you have problems before you can solve them. It is an unfortunate thing that the first time we build something it doesn't work perfectly—that is just characteristic of a complex system.

Mr. ROUDEBUSH. All of the complaints of the astronauts concerning the preliminary operation were looked into?

Dr. MUELLER. Yes, sir, and all of the real complaints were corrected.

Mr. ROUDEBUSH. What do you mean by real complaints?

Dr. MUELLER. Well, sometimes people will just complain about the color of the paint or something like that, but anything that had any real impact on the trainer or on the program had been corrected.

Mr. TEAGUE. George, I would like to ask a couple of the committeemen a question and they can answer or not.

Two of them have been to North American, Los Angeles, and have been through the spacecraft and they have been through the cleaning room. I would like to ask them what their impression was.

Mr. Gurney.

Mr. GURNEY. It looked like a pretty thorough job to me. I am not an engineer.

Mr. TEAGUE. Mr. Cabell.

Mr. CABELL. I was definitely impressed by the enthusiasm and by the keen interest they were taking in their work, even down to the mechanics and certainly I was not competent to be able to judge the quality of the work other than by the atmosphere which I thought was good.

I thought it was, under the circumstances out at North American, for example, excellent.