

lower stages of the booster very much where we are now with respect to NERVA. We will be in the position of considering how we can resume production of the lower stages at some other time with better equipment just as we are now considering how to improve the performance of the upper stages by replacing one or more of them with NERVA.

I hope very much, and I have mentioned this very strongly to President Johnson—I know he is deeply concerned—that we do not terminate the production of the Saturn V at a time when the U.S.S.R. is about to fly a booster that in dimensions is, in my opinion, considerably larger than the Saturn V.

Senator CANNON. But, as things stand now you would actually procure the last of your proposed Saturn V's in the 1970 program, is that right?

Dr. PAINE. Yes, sir, but we would not be buying any items that would run beyond number 15 of the Saturn V's. Now in this 1969 budget we are planning to terminate production at the end of No. 515, but still maintaining a somewhat flexible stance in the hope that in 1970 a decision can be made to keep at least a minimal production of Saturn V's going beyond No. 515.

Senator CANNON. What do you define as a minimal number of Saturn V's?

Dr. PAINE. Senator Cannon, we have in the industrial base, which is spread widely throughout the Nation for the first three stages and the instrument unit, a capability to produce up to six a year. That is being eroded this year. We, I think, should certainly consider a minimum no lower than two per year and this is not a very efficient production level. The real problem we face is can we phase in with, say, two Saturn V's a year some other work so you have available in this large industrial base, in the assembly facilities at Michoud, and at the same time at Mississippi Test Facility and the launch facilities at the Cape enough work that can be efficiently done so that you do not have your costs rise to astronomical figures for the number delivered. It is very hard to specify anything lower than two.

Of course, if we were told produce one per year so as to have a minimum of all the skills necessary, it could be done but the cost would increase rapidly. Maybe Dr. Mueller—he is not here—Mr. Mathews is deputy to Dr. Mueller in the manned space flight program. He was the manager of the Gemini program and he has been concerned with how you build and fly manned equipment for some time. Maybe he would want to give you an opinion as he sees it from the operating standpoint, if you wish to hear him.

Senator CANNON. I have another question or two here and then perhaps he might want to comment on all of these.

In an August press release you referred to a gap, NASA referred to a gap with reference to continuing the Saturn V production.

Now, just what did you mean by that gap? Is this what you have just been talking to?

Mr. WEBB. Yes, sir. I really mean, we are fighting hard to get enough money in the 1970 budget to make sure the production is continued beyond No. 515. Even at best we will have some gap in deliveries, although work will be going on aiding future deliveries. I think the gap is mainly in the production for 1 or 2 or 3 years, when we