You feel the average satellite might last 10 years and yet you have a mandatory switchoff at the end of 6 years. Why don't you have a command switchoff at the time you want to switch it off permanently rather than a fixed time, Dr. Tucker?

Dr. TUCKER. At the time of the——

Mr. HOLIFIELD. So you could get additional years of service in the event it was still working.

Dr. TUCKER. That is a very fair question.

At the time of the design of these satellites we weren't prepared—we didn't have the technology for giving secure commands from ground to the satellite and, therefore, a command turnoff would have been accessible to other parties besides the United States.

Mr. HOLIFIELD. I see.

Dr. TUCKER. At the same time there had been an unfortunate experience with one of the early satellites—the VANGUARD—which had a much longer life than expected and generated signals for a long time and caused interference. Therefore, we had a directive saying that satellites should have a provision for turning off their power. With a life design of 1½ years, 6 years was picked as a prudent number.

Mr. HOLIFIELD. Was there any other way to solve this problem? Such as a small destruct explosive that could be set off to effectively turn off the——

Mr. TUCKER. I think the essential requirement is an ability to turn off which only we can activate. Today we have confidence in the technology for secure command so that we can introduce turnoff switches or other devices under our unique control. At the time of this satellite system we weren't prepared with that kind of technology.

Mr. HOLIFIELD. That includes the last eight you launched.

Dr. TUCKER. They are identical in design.

Mr. HOLIFIELD. As the first.

Dr. TUCKER. Yes.

Mr. HOLIFIELD. You hadn't developed this secure method of turnoff at the time you built those.

Dr. TUCKER. That is correct. It is available for satellites now being designed. It would have added significantly to the weight of these satellites, and at this late date it didn't seem prudent to go back to a major redesign in order to incorporate that feature.

Mr. HOLIFIELD. All right.

Dr. TUCKER. These satellites are in independent orbits, each drifting about 15° per day along the Equator. Each satellite is visible to about 40 percent of our globe. However, because the orbits are independent, the satellites will occasionally bunch together so that none is simultaneously visible from two terminals between which a communications link is desired. For the link between Hawaii and South Vietnam, which is one of our longest and most important links, the probability of having at least one satellite in common view is 92 percent with a total population of 17, and this probability has improved to 96 percent with a population of 25. Shorter links, of course, have much higher availabilities.

Our terminal population has also grown considerably. A year ago we had in the field two fixed terminals with 60-foot antennas and seven transportable terminals with 40-foot antennas. Since then we have deployed six more of the 40-foot terminals and seven of the new