had misunderstood you, and this committee did understand you, and I think it would have been better off if there had been this understanding all along.

This was my only statement. I know you feel the same way.

General McKee. I certainly do.

The Chairman. Mr. Ottinger.

Mr. Ottinger. Mr. Chairman, I think our last exchange generated perhaps more heat than light, and I wonder if you could answer a few of the specifics that I raised. I will just pick out two or three that I think are of most concern that haven't been covered by the committee.

I am told it would increase safety substantially in the northeast corridor from Washington to Boston, if planes were under continuous control of the towers. I understand they are not, at the present time. What are the disadvantages or difficulties in instituting that kind of control?

Second, is there a three-dimensional radar available at less than $2 million as Electronics magazine states?

General McKee. This question of three-dimensional radar has come up a number of times, and I believe this committee, I am no expert in three-dimensional radar, but I have asked that this be looked into, because it has been raised a number of times, and I would like for Mr. Thomas to talk to the three-dimensional radar, and maybe shed a little light on this great thing that is supposed to solve all the problems.

Would you talk to the three-dimensional radar, Dave?

Mr. Thomas. Mr. Chairman, Mr. Ottinger mentioned the Maxon, Hughes and I.T. & T. efforts. We have a 3–D Maxon up at Atlantic City. I have seen the Hughes system with the Navy, and I am familiar with the I.T. & T. system. The object of all so-called three-dimensional radars is to get altitude information into the air traffic picture.

The military services obviously deal with a noncooperating type target, so they do employ height finders quite extensively. These height finders, narrow beam, seek out a particular target, get an estimate of its height, and this information is passed on to an interceptor, who uses its airborne radar which intercepts and gets a very precise estimate of the height.

The problems here is one of just geometry. In the air traffic control system, we use in the lower air space 1,000 feet of vertical separation as the standard, and in areas close to the radar antenna, we use 3 miles, and if we are more than 40 miles from the radar antenna, we use 5 miles as the lateral separation standard; that is, two airplanes would not be closer than 5 miles, not because the wing tips would hit, but because this is the resolution of the radar. If we took our best resolution in the horizontal plane and put it on end in the vertical plane, then we would deal very well with airplanes that had 15,000-foot separation at 40 miles and 25,000-foot separation at more than 40 miles, if we used the same standards.

There have been attempts to do something about this, and in the case of Maxon, since this is the one we bought, it was a series of antennas, one stacked upon the other, varying from each other by a fraction of a degree, and then the radar will look at all these antennas, select the ones that it thought had the strongest return, make a calculation on where the centroid would be, and then estimate this as the height.