

We are not opposed to advancement. All we are saying is that with the apparent increase in total aviation traffic, we must come up with a better mousetrap. It is going to take time to do it. The total flow requirements far exceed our capacity now in the high-density areas. It will get worse, gentlemen, before it gets better.

Now we have also got an overlapping situation in terms of collision avoidance equipment as opposed to the air traffic control system. We and no one else that I know of advocate that the collision-avoidance system will displace the air traffic control system. Collision avoidance would simply be a supplement to the air traffic control system. So we cannot under any circumstances consider that we can rest on our oars with the present air traffic control system and depend on a collision-avoidance device to make up for the deficiencies.

Now the collision-avoidance system, which is item 3 on the index on page 1, the present estimates are that this system after it is developed and is proven safe will cost approximately \$30,000 to \$50,000 per aircraft. Now the airlines and some of the business aviation can probably afford this cost. This dissertation is found on page 7. However, to make this system really do the job that it must do, we must talk about all aircraft being so equipped—military, general aviation, and commercial airlines.

It goes without saying that general aviation cannot afford a device that costs \$30,000 to \$50,000. A man could buy two or three airplanes for that kind of money. So, we must provide some means of developing a collision avoidance system that is either from a cost standpoint acceptable to general aviation or provide some means of a lease for the equipment per flight-hour on an as-needed basis. I do not profess to state which is the more likely or possible solution to the problem, but I am saying that you cannot have a portion of the aircraft equipped with collision avoidance system and have full effectiveness from the standpoint of its total utilization and maximum results in terms of safety. We must exert enough effort to develop this system to have it work. This is one of our big problems today. There is no question about it. I think every pilot sitting in this room can verify this, probably with experience of his own and in many cases of rather recent origin.

Also on page 7, referring to the transport aircraft crew requirements, we have made a presentation to the Federal Aviation Administration on this subject. We have delivered a copy of a book with a blue cover.

(The publication referred to, "The Need for a Three-Man Crew on Jet Transports," has been placed in the committee files.)

Mr. RUBY. We have delivered copies to the Air Transport Association and the Aircraft Industry Association; we are making no secret of our viewpoints. We do not contend that a three-man crew can eliminate all accidents, midair collisions. We are making no such contention. We are, however, stating that we do believe that a three-man crew is an essential element to help minimize this exposure. Why is this so? As we get into high-speed airplanes that operate short distances, the major portion of the operating life of this airplane will be consumed in takeoff, climb, descent, and landing. We do not have a displacement yet for the see-and-be-seen principle, even though that