

ing system just tell you there is a potential accident or conflict. It does not tell you what direction or which way to go. This is why I say the airline pilot would prefer the avoidance system rather than the proximity warning indication.

Mr. FRIEDEL. What about the cockpit? Do they have enough visibility in the present planes?

Mr. RUBY. No. We do not at this moment know how to do much better. You cannot even see the hemisphere in front of you. You can see nothing behind you. The cockpit cutoff is a fairly narrow range of vision. It is almost a physical impossibility to improve this to any great degree.

Now there has been some slow evolution in this and the cockpit visibility is better today, at least on some airplanes, than it was on an earlier vintage, but you still are quite limited in the angles of vision that you have available to you.

Mr. FRIEDEL. I want to say that we have our chairman of the full committee with us, and I know of no one who is more interested in air safety. I would like to know if he wishes to say anything at this time.

Mr. STAGGERS. No, Mr. Friedel, except to thank Mr. Ruby. I remember when he was before our committee previously that he is a very good witness. I agree with him on the use of training simulators. I remember during the Second World War the use of Link trainers; and having had some training in them myself in navigation and flying, I know they were exceptionally good.

I certainly agree with you on that. As I understand your testimony, and Miss Peterson's, there is nothing the matter that money, research, and training won't cure.

Mr. RUBY. Almost this is true. The cockpit visibility, I don't know how to cure that one, I will be perfectly honest about it. We can stress improvement, but to get full spherical vision is almost a physical impossibility. On the other hand, it is true that research, development, and money will handle many of these things in a complete fashion. For example, we know, ourselves, that the airport has not up to now kept up with the design of the airplane. We know that if we had enough runway and enough navigation facility we would eliminate a good bit of the incidents and accidents that occur by overruns, underruns, and drifting off the sides of the runways. We think that the collision avoidance system can certainly be developed.

While it is extremely expensive at its outset, sooner or later we will come up with one that works and does the job. This means money, research, and development. I agree with you a hundred percent.

Mr. STAGGERS. I remember that following your last appearance before the committee some changes were made in flight training.

Mr. RUBY. Yes.

Mr. STAGGERS. That was a help at least. We hope that these hearings—that is the reason they are being held—we hope they will increase safety for all the people. We are not experts ourselves. We are here to get suggestions from experts and to see that they are doing their job. I think the FAA is trying to do the job as all the other agencies are, but they need help and we need to get more money for the airports and for the research and all the other things that need to be done.

It is a hard thing right now, but we realize the importance of air safety for the entire public.