

Mr. DEVINE. I think my time has expired, Mr. Chairman. Thank you.

Mr. ADAMS. Mr. Kuykendall.

Mr. KUYKENDALL. Thank you, Mr. Chairman.

To pursue the new high-angle takeoff questions of Mr. Devine, could you give me an idea on the profile what the altitude difference at, say, 1 mile off the end of the runway might be on the new testing that you are talking about as compared to the presently used procedures?

Mr. BRUNELLE. One mile would be approximately 3 miles in brake release, and I would say there wouldn't be any additional height or any less noise.

Mr. KUYKENDALL. How about 2 miles?

Mr. BRUNELLE. This is when you start paying off. From 2 miles out you start cleaning the airplane up, and the thrust that you have been carrying to support all its drag from your flaps is gradually being reduced so that you are getting this thrust as being transformed into climb angle and altitude.

Mr. KUYKENDALL. Here is something that I want to pursue, and that is the matter of the approach. You have been discussing takeoff. Would you not agree that we have made more progress in the takeoff than in the approach?

Mr. BRUNELLE. Very definitely.

Mr. KUYKENDALL. It seems from my flying days as a pilot in World War II with prop airplanes, that a lot of our concepts of safety have absolutely reversed as far as power is concerned.

You remember that in flying an old propeller airplane the high-angle approach is safer than a low power-on approach, and the high-angle takeoff is much more dangerous than leveling off and getting your speed. Those two things seem almost to be totally reversed.

We were severely criticized for dragging an airplane in for 2 miles, but that is what we do now. What do you think about the idea of a higher-angle approach?

Mr. BRUNELLE. With existing equipment?

Mr. KUYKENDALL. Let's assume that we may change existing equipment.

Mr. BRUNELLE. Then with increased technology, I think it is perhaps within the state of the art to come in higher, but not—

Mr. KUYKENDALL. You are talking about an ILS glide path change, right?

Mr. BRUNELLE. No; not necessarily. In some of the NASA tests they are using high-lift devices and this sort of thing that are generators giving us the capability of higher sink rates and then spilling your sink rates.

Mr. KUYKENDALL. Does this thought of the high-angle approach bother you personally?

Mr. BRUNELLE. It would with existing equipment. Of course, we have made several statements on this. We are not opposed to it. We would like to experiment with them a little and be sure that it is feasible before we start scheduled operations.

Mr. KUYKENDALL. Do you have any idea whether NASA-tested equipment would be available as additional equipment on existing aircraft or would it be usable only on new aircraft?

Mr. BRUNELLE. I am of the opinion that they are not looking toward retrofitting now on existing equipment. I could be wrong on that. I am