airspace should be restricted, we only say it should accommodate all parties in a safe, efficient, and equitable manner.

Until someone can provide valid arguments to the contrary, it is our view that the nation's airspace should be available to all members of the aviation community on a first come first serve basis. For the past five months, considerable dialogue has been presented by two special interest groups in aviation. The Air Transportation Association, on one side, is advocating limited use of airspace by other than larger, revenue producing aircraft, and general aviation groups on the other are opposing this position. Both sides would like to "go to heaven without dying"—each would like absolute freedom in airspace utilization without having to pay a price for it.

I feel we must encourage careful and sensible specification of operating limitations in our airspace. However, we should first be concerned with those changes in procedures and regulations which enhance safety and not the economic gain for any specific interest group. Unfortunately, there is mounting evidence that new regulations and procedures have, and will continue to be, initiated that have economic bases. I will discuss two such rule changes later in my testimony.

Today's air traffic control system is basically a good one for traffic loads of ten years ago. It has evolved over the past thirty years into a reasonably safe and effective system for moving limited numbers of aircraft. However, the nonlinear growth of aviation negates the validity of this system. The time has arrived for *all* of us to become actively concerned with system changes. While the events at Hendersonville, Urbana, Grand Canyon, and New York bring to mind the mutual interference of aircraft, there are other equally critical problems. ATC is like the proverbial iceberg, i.e., there are hundreds of problems below the surface of which the general public is not aware. There are short-term solutions to some of these problems. I would like to direct my attention to the short-term problems, because of the effect they can have on the existing situation and allow for orderly system growth and development.

The controller-pilot air traffic system is much like the pilot-aircraft system in the following manner. The aircraft has known physical and flight operating characteristics. The air traffic system has several known characteristics among a large number of variables. The pilot, with skill and experience, can make his aircraft into a far better vehicle by his expertise. If the aircraft is capable of performing short-field take off and landings, the pilot usually can exceed the published performance capabilities through expert flying. In the same manner, the air traffic controller is able to do a better job of controlling air traffic, with existing radar and other hardware devices, than the original requirements set forth by the system designers. This is true only if the controller has some freedom in operational decision-making. Given a good working environment, adequate visual aids and communication channels, the controller can greatly improve upon the existing system. However, in today's ATC system, the controller is greatly constrained, inhibited, and demoralized because of inappropriate, restrictive procedures and policies and conditions of overwork without prospects of tangible rewards.

At this point, I would like to separate the problems of air traffic control into two categories and talk briefly about each. They are system oriented problems and the human oriented problems. These problems are not independent of each other; they interact vigorously, and do, in general, have a debilitating effect on ATC.

The key system oriented problem stems from traffic density. A salient characteristic of ATC which promotes congestion is the necessary convergence and divergence of aircraft on single points. This is true in the enroute airway navigation structure and, of course, in airport terminal areas. Because of this point, convergence characteristic, controllers have only a few techniques for maintaining proper aircraft separation. These include altitude, airspeed, and heading differences. Unfortunately, the controller can only manipulate aircraft that communicate with him and follow his commands. He does have aids in providing aircraft separation such as radar, instrument landing systems, and voice communications.

By and large, the limitations placed on the controller are those of communication, numbers of aircraft being handled, and knowledge of the aircraft's positions in space.

From a system operation viewpoint, the simplest controlling task is in real instrument flying weather. During IFR (Instrument Flight Rules) operations, the controller is able to effectively move aircraft to and from airports and on