The Hilton Study provides a discussion of the First Golaszewski Report, noting those researchers' disagreement with Mr. Golaszewski's methodology and questioning his conclusions. The study also notes methodological concerns regarding the cited works by the Office of Technology Assessment; Mortimer; and Guide and Gibson (1991).

Dr. Michaels concludes that (1) the Hilton Study does not present convincing evidence that pilots holding Class I medical certificates past the age of 60 are not at increased risk of accidents, and (2) that the study is a methodologically invalid foundation for rulemaking. He suggests that the analyses performed are not valid because of the small size of the study (very few accidents and a very large number of flight hours), because the study is insensitive to the real concerns (whether aging is associated with increased risk for incapacitation), and because the study does not have well-documented exposure data. The later refers the fact that the Hilton Study calculated accident rates by comparing the total hours flown. However, because most accidents occur during take offs and landings, Dr. Michaels states that hours flown is not a useful measure in calculating the risk of accidents. He believes that the methods used in the Hilton Study would obscure any increased rate of accidents among older pilots in the analyses presented.

The First Golaszewski Report concluded that pilots with Class I medical certificates (required for part 121 air carrier pilots in command) and Class II medical certificates (required for other commercial pilots) had a substantially higher accident rate after age 60 than at younger ages. This report was cited by the FAA in denying a petition for exemption from § 121.383(c) submitted by Courtney Y. Bennett et al., and John H. Baker, et al., in 1986. Golaszewski, in the study report itself, noted and resolved to the FAA's satisfaction various sources of potential error and provided rationale for the choices made. Because the study viewed the accident experience of holders of Class III medical certificates (required for non-commercial operations) and of all classes of medical certificate combined rather than that of identified airline pilots, however, and because of disagreement with Golaszewski's selection of numerators and denominators for calculating accident rates, the study findings and methodology were disputed by the petitioners in their later legal action in a U.S. Circuit Court of Appeals. Although the court identified limitations in the study, it upheld the FAA's denial of the petition. *Baker* v. *FAA*, 917 F.2d 318 (7th Cir. 1990).

The Second Golaszewski Report indicated similar findings. These studies were based on data contained in the National Transportation Safety Board Accident Records Database and the FAA Comprehensive Airman Information System medical database.

It should be noted that increasing accident rates with age is not found just in aviation. The National Research Council (NRC) has found increasing car accident rates with increasing driver age. In a report published in 1988, the NRC concluded that ''older drivers show an involvement in crashes that is more extensive than that of middle-age drivers, * * *'' *Transportation in an Aging Society*, Transportation Research Board, National Research Council, Washington, D.C. 1988. While safely piloting an airplane is more complex than driving an automobile, both require knowledge, quick reflex actions, good judgment, long-and short-term recall, and many other skills and abilities. Accident rate data represent a quantitative compilation of occurrences where skills and abilities were, for one reason or another, inadequate to cope with a specific situation.

Because statistical analysis of over-age-60 pilots in part 121 operations cannot be done (because there are no such pilots) studies must use surrogate data. As has been the case in both the Hilton Study and the Golaszewski reports, such analyses are subject to the criticism that the data used do not reflect reality and, therefore, are flawed. This is even truer with the consideration of accident rate data in car crashes. Unfortunately, accurate counts of all pilots flying in scheduled air carrier operations during a given time period and their age, current and total flight time, and accident experience are not available. Accidents in air carrier operations are, fortunately, rare, and there are other factors (e.g., seniority bidding for routes) that compound the difficulties encountered in developing meaningful statistics regarding the effects of aging. Further, flying by non-part 121 pilots generally involves aircraft, equipment, airports, operational conditions, and operating procedures that are quite different than part 121 operations. Nevertheless, these studies and the efforts of earlier researchers provide a foundation for this current consideration of the issue.

The Hilton Study, the First Golaszewski Report, and the Second Golaszewski Report sought to define the effects of aging on older pilots in terms of accident rates. While conclusions may differ as to the effect of aging on pilots, the studies are similarly limited by the rule itself since data cannot be gathered on pilots over age 60 operating in part 121 operations. Factors that may have contributed to the contradictory conclusions are that the accident rates for pilots over age 60 can be determined only in operations outside of part 121 and, therefore, may not be fully useful in drawing conclusions about pilot performance in operations conducted under part 121; and grouping the data differently may lead to different conclusions. While we believe the studies all tend to support a regulatory age limit, they provide no consensus as to precisely what that age limit should be.

In the NIH Study, the most comprehensive study yet performed of the issues involved in age-related retirement of airline pilots, the Panel found that ''age-related changes in health and performance influence adversely the ability of increasing numbers of individuals to perform as pilots with the highest level of safety and, consequently, endanger the safety of the aviation system as a whole.'' In response to the question, ''What is the effect of aging on the ability of individuals to perform the duties of pilots with the highest level of safety?'', the Panel responded, in part, that—

> Undoubtedly, the number of individuals experiencing substantial decline in performance does increase with advancing age * * * Variability in performance appears to increase, and average performance to decrease, with increasing age * * * the risk of an accident increases in the later life of a pilot, and * * * such risk probably accelerates with advancing age * * * The duties of pilots embrace not only maneuvering skill but also decision-making, crew coordination and resource management. Decline in cognitive and psychomotor performance, as well as in physiological performance, occurs with increasing age and will affect how these duties are executed. The health status of the pilot is apt to affect his/her flying performance. In this regard, subtle decrements in performance due to aging processes or subclinical functional impairment are more likely to pose a problem than is complete failure of performance due to sudden incapacitation.

The Hilton Study has not provided answers to these basic concerns.

After careful deliberation, the FAA has determined that the Hilton Study does not provide an acceptable basis warranting proposing to change the Age 60 Rule. Supporters of both the Hilton Study and the First and Second Golaszewski Reports have good points. The subgroups studied by each is to some extent limited, in that they necessarily do not mirror the subgroup