

commuter flights. The average value of avoiding such an accident was estimated to be about \$15.3 million. This estimated accident cost is considerably higher than the estimated accident cost used in the part 135 training upgrade benefit section. The difference results, in part, from the size of the samples. Thirty accidents were attributable to pilot error and only nine to crew coordination. The three high-cost accidents associated with crew coordination drive up the average cost of those accidents.

Initial training will begin in 1996 and continue through 1997. Therefore, the FAA assumes that full benefits cannot be achieved by this rule until 1998. The FAA estimates the value of benefits by multiplying the average value of a part 135 CRM-related accident (\$15.3 million) by the number of potential accidents (accident rate times projected number of flights). Over the ten year period, the benefits of this provision are estimated at \$163 million (discounted). However, the FAA expects to realize only some of these benefits by imposing this requirement.

Part 121 Crew Resource Management Training

During the period 1984 through 1993, crew coordination was a probable cause in 17 accidents involving part 121 aircraft. These 17 accidents resulted in 181 fatalities, 45 serious injuries, and 130 minor injuries. During this period, air carriers flew 61.55 million flights resulting in an air carrier accident rate due to crew coordination problems of 0.2762 accidents per million flights.

About two-thirds of the part 121 pilots will receive training during the first year and the remaining one-third of the pilots will complete the initial CRM training by the end of the second year. Thus, the FAA expects reduced benefits for the first two years. The annual, maximum potential benefits cannot be realized until 1998. The FAA estimates the maximum potential value of benefits by multiplying the average value of a part 121 CRM-related accident (\$34.4 million) by the number of potential accidents (accident rate times flights).

Over the ten-year period, the estimated value of the benefits of this provision is about \$305 million (discounted). Once again, the FAA expects to realize only some of these benefits by this proposed requirement.

Total Benefits

Benefits of this rule are estimated to total \$579 million. The largest share of benefits, about \$305 million, is attributed to part 121 CRM training. Part 135 CRM training and upgraded pilot

training will account for about \$163 million and \$111 million, respectively.

Cost-Benefit Comparison

The FAA estimates that this rule will cost approximately \$253 million over 10 years. The benefits are estimated to be \$579 million. With respect to the part 135 flight crew training upgrade, the discounted training costs will be about \$17 million, and the discounted value of the expected benefits is \$111 million. With respect to part 135 CRM training, the discounted training costs will be about \$6 million, and the discounted value of the expected benefits is \$163 million. With respect to part 121 CRM training, the discounted training costs will be about \$230 million, and the discounted value of the expected benefits is \$305 million.

The estimated total cost of the rule has decreased significantly since the NPRM was published. Changes in assumptions—based on additional information about industry practice—were primarily responsible for the adjustments. The final analysis takes into consideration, for example, that 35 percent of part 121 pilots are already receiving and will continue to receive CRM training under AQP. It also takes into account that 30 percent of the part 135 pilots—those employed by dual-certificated operators—already train under part 121. Based on current information, the FAA has also adjusted its assumptions about new-hire rates and the costs of travel and instruction associated with training. In total, these adjustments lead to a lower estimated incremental cost of this rule.

To be cost beneficial, this rule does not have to be 100 percent effective in preventing the types of accidents that it is designed to prevent, nor does the FAA claim that these requirements will prevent all of the accidents for which this rule was designed. If the part 135 training upgrade is only 16 percent effective at preventing these accidents, then the benefits of this requirement will exceed the costs. CRM training for part 135 flight crews needs to be only 4 percent effective for the benefits to exceed the cost of that requirement. However, CRM training for part 121 flight crews needs to be over 75 percent effective for this requirement to be cost-beneficial.

The requirements for upgrading part 135 pilot training should be considered complementary to the proposed Commuter Rule (while the two CRM requirements are independent of the Commuter Rule). The goal of both the Commuter Rule and the part 135 training upgrade requirement is to reduce the accident rate of scheduled

carriers operating 10-to-30-seat airplanes under part 135 to the existing part 121 accident rate. The benefits of the part 135 training upgrade requirement are part of the benefits estimated for the Commuter Rule, and they cannot be separated from that rule because it is not possible to determine which rule would have prevented a given accident. For example, individual accidents may be prevented by any one of several factors, such as prevention of the occurrence of a problem with an airplane in the first place, by providing more or better crew training to properly respond to the problem after it occurs, or providing a dispatcher to help identify a problem before it becomes a potential accident. For this reason, the FAA has chosen to combine the estimated costs of upgrading part 135 pilot training with the cost of the Commuter Rule and compare these combined costs with the estimated benefits of the Commuter Rule. When the estimated cost of the part 135 pilot training upgrade requirement (\$17 million) is added to the estimated costs for the Commuter NPRM (\$275 million), the combined costs (\$292 million) are still less than the estimated benefits of the Commuter NPRM (\$393 million). The estimated costs and benefits will probably be different in the Commuter Final Rule, but the estimated cost of the Commuter Final Rule plus the \$17 million for the part 135 pilot training upgrade requirement is still expected to be less than the estimated benefits for the Commuter Final Rule.

Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure that small entities are not unnecessarily and disproportionately burdened by the Government regulations. The RFA requires agencies to review rules that may have "a significant economic impact on a substantial number of small entities."

The rule will affect those small entities regulated by parts 121 and 135. The FAA's criterion (for documentation, see 47 FR 32825, July 29, 1982) for "a substantial number" is a number that is not less than 11 and which is more than one-third of the small entities subject to the rule. For air carriers, a small entity has been defined as one who owns, but does not necessarily operate, 9 or fewer aircraft. The relevant FAA criteria for "a significant impact" are incremental cost of \$67,800 per year for a scheduled air carrier with a fleet size of 60 seats or fewer, and \$121,300 for a scheduled air carrier with a fleet size of more than 60 seats. (All monetary values are in 1994 dollars).