the vertical direction and rate that must be achieved by an aircraft in order to prevent insufficient separation. When an RA occurs, the pilot flying should respond by direct attention to RA displays and should maneuver as indicated unless doing so would jeopardize the safe operation of the flight or unless the flight crew has definitive visual acquisition of the aircraft causing the RA. TCAS II equipment provides both traffic and resolution advisories only in the vertical plane.

The Rule

This rule accomplishes two things. First, it authorizes deviations from an ATC clearance when responding to a TCAS RA. Secondly, it requires pilots to notify ATC as soon as possible if they deviate from a clearance in response to a TCAS RA. This action codifies existing policies and practices that were initiated during the TCAS implementation period.

Discussion of Comments

Interested persons were invited to participate in this rulemaking action by submitting written data, views, or arguments. All comments received during the comment period were considered before making a determination regarding this final rule. The following is a discussion of the comments received.

Five comments were received in response to the NPRM. Of this number, three comments were received from associations and two from individuals. Most commenters supported amending FAR 91.123(a); however, three commenters opposed amending FAR 91.123(c).

I. Compliance With ATC Clearances

Most commenters support this amendment which allows flight crews to deviate from an air traffic control clearance in response to a TCAS RA. The Air Transport Association of America (ATA) and the Air Line Pilots Association (ALPA) stated that the proposal is fully consistent with the ATA petition referenced in the Notice. ATA believes this action will remove a potential obstacle to the full use of TCAS by allowing flight crews to follow a TCAS RA without pausing to determine if the RA maneuver would require the crew to declare an emergency. Another commenter states that he believes safety would be improved with this amendment, and supports it. The National Air Traffic Controllers Association (NATCA) did not comment specifically on this proposed change, but offers general

comments stating they do not believe the air traffic system is as safe today as it was prior to the introduction of TCAS.

On December 30, 1987, the President of the United States signed Public Law 100-223 which, among other provisions, amended the FAA Act of 1958, Section 601, by adding a new paragraph (f) entitled "Collision Avoidance Systems." This section requires TCAS II on "each civil aircraft of more than 30 seats and which is used to provide air transportation of passengers, including intrastate air transportation of passengers." The amendment does not provide for the exception of any class of civil operation or operator, U.S. or foreign, from the basic rule. Consequently, the FAA promulgated numerous regulations (several of which have been referenced earlier in this document) pertaining to TCAS. In addition, the TTP, along with the Separation Assurance Task Force (SATF), were established to investigate and resolve TCAS related problems in the NAS which are discovered during implementation. Participants in this program include the FAA, ATA, Regional Airline Association, ALPA, Allied Pilots Association, NATCA, Transport Canada, TCAS equipment manufacturers and the major, national and regional air carriers.

The FAA disagrees with NATCA's view that TCAS has compromised safety. Since the introduction of TCAS into the NAS, both air traffic controllers and flight crews have adjusted their operating procedures. With the assistance and cooperation of flight crews and air traffic controllers, surveys have been collected and volumes of data analyzed. As issues surface, the TTP provides guidance for timely resolution that has resulted in better training for both pilots and controllers, the issuance of two advisory circulars addressing the use of TCAS, amendments to the controllers handbook and the Airman's Information Manual (AIM), and updating the TCAS software in order to eliminate false and nuisance RA's.

At the second annual International TCAS Conference held in Reston, Virginia in September, 1993, TCAS was lauded by many flight crews as a safety enhancing cockpit device. For example, TCAS was credited by

For example, TCAS was credited by the captain of a major air carrier for saving the lives of nearly 700 people in two B747 aircraft traveling over the Pacific Ocean.

The TCAS Industry Alert Bulletin #5, issued February 18, 1994, states that during the prior two years, 16 encounters had occurred wherein TCAS II displayed unnecessary resolution advisories that directed pilots to cross through each other's altitudes. The RA's were unnecessary because the aircraft were safely separated by the ATC system. In each of these encounters, the TCAS logic detected the high vertical closure rate of the two aircraft and predicted the close proximity of the aircraft without knowing that the aircraft intended to level off 1000 feet apart in altitude.

In order to eliminate these unnecessary RA's, a new version of the TCAS logic (Version 6.04A) was created and installation required by 12/31/94. This logic will not generate altitudecrossing RAs when aircraft level off within 1000 feet vertically of one another. None of the 16 encounters previously mentioned would have resulted in altitude-crossing RAs with the Version 6.04A logic installed.

II. ATC Notification

ATA and ALPA oppose this proposal which requires flight crews to inform ATC as soon as possible when deviating from an ATC clearance in response to a TCAS RA. ALPA states they do not oppose notifying ATC of any deviation caused by responding to a TCAS RA; however, they believe the proposal may imply a sense of urgency for pilots to advise ATC of a deviation at a time when complete attention must be focused on identifying the intruder and responding to the RA. ALPA states this sense of urgency may also be prompted by a concern over possible enforcement action should the crew neglect to report the event due to a directed frequency change or some other unanticipated event. ATA comments that the phrase "as soon as possible" implies that notification to ATC of a deviation should take place prior to executing the maneuver. ATA suggests the word "practical" be used in lieu of "possible" which would be consistent with the AIM.

The FAA does not agree with replacing the word "possible" with "practical". The word "possible" does not mean that the notification has to take place before the pilot has executed the appropriate maneuver. "Possible" does, however, contain a greater urgency than the word "practical," and would require notification to ATC of the deviation as soon as the pilot maneuvers the aircraft to a safe operating environment. The language is consistent with current wording contained in the regulation that requires a flight crew who, in an emergency, deviates from an ATC clearance to notify ATC as soon as possible. If a pilot deviates from an ATC clearance, the controller must be given timely notification of that deviation so that appropriate instructions and/or