Comments are specifically invited on the overall regulatory, economic, environmental, and energy aspects of the proposed rule. All comments submitted will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons. A report summarizing each FAA-public contact concerned with the substance of this proposal will be filed in the Rules Docket.

Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this notice must submit a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket Number 94–NM–252–AD." The postcard will be date stamped and returned to the commenter.

## **Availability of NPRMs**

Any person may obtain a copy of this NPRM by submitting a request to the FAA, Transport Airplane Directorate, ANM-103, Attention: Rules Docket No. 94-NM-252-AD, 1601 Lind Avenue, SW., Renton, Washington 98055-4056.

## Discussion

The FAA has received numerous reports of fatigue cracking and/or corrosion in the strut-to-wing attachments on Boeing Model 747 series airplanes. In two cases, cracking resulted in the failure of a strut load path and the subsequent loss of the number 3 engine and strut. In both cases, catastrophic accidents occurred when the number 3 engine and strut separated from the wing of the airplane and struck the number 4 engine, causing it to separate from the airplane. Investigation into the cause of these accidents and other reported incidents has revealed that fatigue cracks and corrosion in the strut-to-wing attachments, if not detected and corrected in a timely manner, can result in failure of the strut and subsequent separation of the engine from the airplane. Investigation also has revealed that the structural fail-safe capability of the strut-to-wing attachment is inadequate on these airplanes.

The FAA has previously issued 9 AD's that address various problems

associated with the strut attachment assembly on Boeing Model 747 series airplanes that are equipped with Rolls Royce Model RB211 series engines. These AD's have required, among other things, inspections of the strut, and strut-to-wing attachment structure.

## **Explanation of Service Information**

Boeing recently has developed a modification of the strut-to-wing attachment structure installed on Model 747 series airplanes equipped with Rolls Royce Model RB211 series engines. This modification significantly improves the load-carrying capability and durability of the strut-to-wing attachments. Such improvement also will substantially reduce the possibility of fatigue cracking and corrosion developing in the attachment assembly.

The FAA has reviewed and approved Boeing Alert Service Bulletin 747–54A2157, dated January 12, 1995, which describes procedures for modification of the nacelle strut and wing structure. This modification entails the following:

1. Changing the strut by adding a new titanium dual side load fitting to the strut aft bulkhead, installing new 15–5 stainless steel midspar fittings on the inboard struts, and replacing the aft bulkhead assembly and overhauling the spring beams on the outboard struts;

2. Changing the wing structure by installing a new dual side load underwing fitting and new support fitting, and replacing the end fitting and replacing the tee fitting bolts common to the rib at wing station (WS) 1140 [and for certain airplanes, installing a new stiffener at the wing midspar];

3. Changing the electrical wiring and hydraulics by rerouting the wire bundles around the new dual side load fitting, splicing additional wire to the wire bundles, and installing new hydraulic tubes; and

4. Installing the strut with a new upper link, a new diagonal brace, and new side links.

This alert service bulletin specifies that the modification of the nacelle strut and wing structure is to be accomplished prior to, or concurrently with, the terminating actions described in the service bulletins listed in paragraph I.C., Table 2, "Prior or

Concurrent Service Bulletins," on page 5 of this alert service bulletin. These terminating actions include the following:

- 1. Replacement of the diagonal brace, midspar and upper link fuse pins with new third generation 15–5 corrosion resistant steel fuse pins;
- 2. Installation of improved bushings in the strut-to-wing attachment fittings;
- 3. Replacement of certain strut-towing attachment fitting fasteners; and
- 4. Inspection and torque check of certain fasteners of the strut-to-wing attachment fittings.

Paragraph III, NOTES 8, 9, and 13 of the Accomplishment Instructions on pages 109 and 110 of the alert service bulletin also describes procedures for inspections and checks to detect discrepancies of the adjacent structure and correction of any discrepancies.

## **Explanation of the Provisions of the Proposed AD**

Since an unsafe condition has been identified that is likely to exist or develop on other products of this same type design, the proposed AD would require modification of the nacelle strut and wing structure, inspections and checks to detect discrepancies in the adjacent structure, and correction of discrepancies. The actions would be required to be accomplished in accordance with the alert service bulletin described previously.

The FAA has determined that long term continued operational safety will be better assured by design changes to remove the source of the problem, rather than by repetitive inspections. Long term inspections may not be providing the degree of safety assurance necessary for the transport airplane fleet. This, coupled with a better understanding of the human factors associated with numerous continual inspections, has led the FAA to consider placing less emphasis on inspections and more emphasis on design improvements. The proposed modification requirement is in consonance with these considerations.

Accomplishment of the modification of the nacelle strut and wing structure would terminate the inspections required by the following AD's: