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Agenda Item 5: Safety Oversight Developments

CONTROLLING FLEET GROWTH AND MANAGING USED AIRCRAFT

(Presented by the United States of America)

SUMMARY

The United States Government recognizes the challenges some civil aviation authorities face to control aggressive aircraft fleet growth, particularly the influx of used aircraft. The Federal Aviation Administration (FAA) would like to offer its perspective and discuss the methods employed by the FAA to control aircraft growth and to ensure the safe operation of older aircraft, primarily through Operation Specifications placed on the operators. The FAA has successfully addressed growth situations through its aging aircraft program and careful monitoring of an air carrier's capability to manage growth. The FAA offers these methods as alternatives to other strategies currently in use, such as placing limitations placed on the import of used aircraft.

1. Introduction

1.1 Many civil aviation authorities are experiencing a challenge managing the growth of aircraft and air carrier operations. To mitigate air transportation shortages, many airlines are leasing or purchasing older model transport category aircraft. The introduction of the older model aircraft into the already expanding fleets introduces factors which the authorities must ensure do not impact of the safe operations of a carrier. These factors include the carrier's experience operating leased aircraft, carrier proficiency in operating a mixed fleet of different configuration aircraft, and adequate engineering and maintenance support for the aircraft.

1.2 To address this challenge, some authorities have adopted requirements that limit the import of certain transport category aircraft. For example, some authorities have restricted the import of used aircraft for a variety of reasons, including aircraft age or operating or maintenance history. While such requirements may seem effective in addressing concerns about the leasing and operation of older aircraft, the United States believes that other strategies for addressing the reliance on older aircraft in expanding a carrier's fleet can be equally or more effective while imposing less of a burden on the operator.

2. **Discussion**

2.1 Aircraft maintenance programs are generally-accepted internationally as effective systems for ensuring the safety of aircraft as they age by imposing maintenance and inspection requirements, along with operational limitations for certain components, on aircraft. Over 5,000 transport aircraft models originally certificated as airworthy over 10 years ago are still in operation. Aviation safety oversight authorities globally accept that aircraft that exceed 10, 20 or even 30 years of age can be safely operated if properly maintained.

2.2 Some authorities have limited the import of used transport category aircraft based on age, *e.g*., less than 10 years from the time of manufacture to the time of delivery into the importing country. For aircraft older than such maximum age limits, the authority may impose other requirements, such as additional inspection or recordkeeping requirements, before allowing the import of the older aircraft. For example, one country has specified that aircraft that do not meet its age limits can be eligible for import only if the aircraft undergoes a comprehensive structural integrity inspection and evaluation by the manufacturer.

2.3 Some authorities also have demanded that before import of an older aircraft, an operation provide a complete set of maintenance, operation and modification records down to the component level since the date of manufacture. However, the more specific an authority's documentation requirements, the more difficult it becomes to actually meet the requirements. National airworthiness codes commonly require airworthiness documentation to be maintained for only a specific period of time after a certain maintenance activity is performed or a component is installed. Thereafter, the operator may properly discard or destroy the maintenance documentation. Accordingly, the widespread adoption of such expanded recordkeeping requirements by importing states could limit the ability of all aircraft owners and operators to transfer aircraft, regardless of age.

2.4 Oversight authorities also have imposed limits on the number of air carriers who could have operated an aircraft prior to its import. However, the reasoning behind such limitations may be flawed, since one operator with poor maintenance systems and practices may do more extensive damage to an aircraft's longevity than five or six operators with excellent maintenance programs. In short, a poorly maintained aircraft ages faster than one that is well-maintained, regardless of the number of operators that had the aircraft in its fleet. In addition, the number of air carriers that had a particular aircraft in their fleets may not be nearly as critical as determining the total operating cycles, loads, and use pattern of the used aircraft. In other words, whether an aircraft is operated by the same carrier for decades or moved from one operator to another does not necessarily have a practical impact on the relative safety of the aircraft. *How the aircraft is operated and maintained affects the safety of the aircraft more than the number of previous owners or operators.*

2.5 While all of the strategies described above may achieve an immediate objective, unrelated to safety oversight, they may not be the most efficient strategies and impose costs and burdens on operators that are not necessary to ensure an adequate level of safety. FAA believes the same safety results can be achieved more efficiently and effectively for both the operator and the safety oversight authority. The FAA recommends consideration of several alternative approaches to the management of fleet growth and to ensuring the safe operation of older aircraft.

3. **Alternative Approaches**

3.1 The FAA recognizes the challenges faced with controlling aggressive aircraft growth. FAA believes that used aircraft can be imported and maintained safely. FAA further believes overseeing air carrier growth through Operation Specifications issued to an operator is a more sound and safety-based approach.

3.2 How can a used aircraft be imported safely? The FAA relies on the airworthiness certification systems of its bilateral partners to ensure that each country from which an aircraft is imported has a system that provides a similar level of safety in aircraft design, manufacture and operational certification. The exporting authority certifies as to the aircraft's condition, after a thorough review of the condition of the aircraft. If problems are discovered once an aircraft is imported, the FAA will work with the other authority to resolve the problems. The FAA provides similar support to other authorities for U.S. aircraft. FAA believes that establishing strong ties with the authorities of the State of Design is one way for Asian authorities to increase their confidence in the used aircraft fleet.

3.3 The FAA has successfully ensured the safety of its aging transport airplane fleet through the FAA's Aging Airplane Program. This program began in 1988, following the Aloha 737 accident, with the premise that aging airplanes can be operated safety given proper design, inspections, modifications, and maintenance. Through this program, the FAA introduced a damage tolerance philosophy to determine the need for structural integrity improvements. The FAA and industry initiated mandatory programs to ensure structural integrity and reduce reliance on repetitive inspections. The initiatives that implemented these activities were the:

- Structural Modification Program – airworthiness directives (AD) mandated necessary structural modifications.
- Structural Maintenance Program Guidelines – guidelines issued by the Air Transport Association summarize structural maintenance and modification actions.
- Corrosion Prevention and Control Program (CPCP) – ADs mandated the incorporation of CPCP in operators' maintenance programs (operators also incorporated these programs voluntarily)
- Repair Assessment Program – operational rules mandated damage tolerance assessment of fuselage pressure boundary repairs.
- Supplemental Structural Inspection Program – ADs mandated damage tolerance based inspections developed by airplane manufacturers.
- Aging Airplane Safety Rule – operational rules mandated structural inspections and record reviews of older airplanes, and required damage tolerance based inspections for primary structure as well as repairs, alterations, and modifications.
- Miscellaneous ADs – numerous ADs, not specifically related to the initiatives listed above, mandated actions to address corrosion and cracking issues.

3.3.1 In 1999, the FAA expanded the Aging Airplane Program to address aging systems issues as well. In addition to over 160 ADs the FAA issued since 1996 to address wiring and fuel tank safety issues, the FAA is continuing to process the remaining rulemaking initiatives needed to address aging transport airplane issues. Those initiatives are:

- Enhanced Airplane Program for Aging Systems (EAPAS) - rulemaking proposal to require enhanced maintenance programs for electrical wiring interconnection systems and new certification requirements for wire safety. The Notice of Proposed Rulemaking (NPRM) comment period closed on February 3, 2006 and the final rule is expected to be issued in June 2007.
- Aging Airplane Safety– rulemaking proposal to require design approval holder support for the Aging Airplane Safety Operational Rules. The NPRM was issued on April 21, 2006 and the comment period closed on September 18, 2006.
- Widespread Fatigue Damage - rulemaking proposal to require the development and incorporation of maintenance actions to preclude widespread fatigue damage prior to the airplane reaching an established operational limit The NPRM was issued on April 21, 2006 and the comment period closed on September 18, 2006.
- FAA is working with other civil aviation authorities to harmonize and align these initiatives to ensure operators can revise their maintenance programs and perform needed maintenance actions efficiently and safely.

3.3.2 The work accomplished by the FAA, other authorities, and industry over the last 16 years has resulted in an excellent safety record for aging airplanes. The FAA believes that maintaining our philosophy and approach regarding aging airplanes will continue to ensure the operational safety of the aging fleet.

3.4 Title 14 of the Code of Federal Regulations (14 CFR) section 119.39(a) states, in part, that an air carrier applicant may be issued an air carrier certificate if, after investigation, the Administrator finds that the applicant is properly and adequately equipped in accordance with the regulations and is able to conduct a safe operation under appropriate provisions of part 121 and operations specifications issued under part 119. The FAA also uses an air carrier's operating specifications to control how quickly an operator may expand its operations.

3.4.1 The only way the FAA can determine if these regulations will be complied with during a period of air carrier growth or change is through a review of all relevant information regarding how the air carrier's growth or change will be carried out and which resources will be used. One source of important necessary information is the air carrier's growth plan. FAA will review these plans with the carrier and may prescribe conditions as part of the carrier's operations specifications

3.4.2 The primary means through which the FAA can regulate the growth of an air carrier is specified in 119.51. This section describes the amendment of an air carrier's operations specifications. Paragraph (a) states, in part, that the Administrator may amend any operations specifications issued under part 119 if the Administrator determines that safety in air commerce and the public interest require the amendment. For example, the FAA may limit the number or type of aircraft an air carrier is authorized to operate by revising their aircraft listing on operations specifications.

3.4.3 In 1998, as a result of a 90-day safety review established to review how FAA inspection resources could be deployed more effectively in response to rapid growth or other such changes of U.S. air carriers, a FAA task force produced Joint Flight Standards Handbook Bulletin HBAW 98-21 and HBAT 98-36 titled *Monitoring Operators During Periods of Growth or Major Change*. The bulletin identified a "growth model" to be used by assigned Aviation Safety Inspectors to monitor an operator and manage its certificate during a period of growth or other major changes in an air carrier's fleet size, composition, or utilization and in its support systems, management, and operations. Air carriers experiencing these changes were requested to submit a growth plan in accordance with the bulletin and respond to four growth factors:

- Change in fleet composition, size, or utilization;
- Change in the air carrier's support;
- Changes in management; and operational change.

4. Conclusion

4.1 The FAA believes used aircraft are critical to an air carrier's economic viability and to the continued expansion of the international air transportation system. Rather than limiting the import of used aircraft, FAA encourages authorities in the region to welcome such imports as an opportunity to put stronger, more effective air carrier management and maintenance programs in place. Tools and experienced methods exist to help authorities manage this growth in a safe manner.

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