

March 2, 2008

U.S. Department of Transportation  
1200 New Jersey Avenue, SE  
West Building Ground Floor  
Room W12-140  
Washington, DC 20590-0001

RE: COMMENTS FROM FEDEX REGARDING AUTOMATIC DEPENDENT  
SURVEILLANCE – BROADCAST (ADS-B) OUT PERFORMANCE  
REQUIREMENTS TO SUPPORT AIR TRAFFIC CONTROL (ATC) SERVICE

### **Introductory Comments**

By publication in the October 5, 2007 edition of the Federal Register, the Federal Aviation Administration issued a Notice of Proposed Rulemaking regarding the Automatic Dependent Surveillance – Broadcast (ADS-B) Out Performance Requirements to Support Air Traffic Control (ATC) Service (hereinafter “ADS-B Out”), Federal Register / Vol. 72, No.193 / Friday, October 5, 2006. Federal Express (FedEx) is an all cargo operator established in 1971. FedEx currently operates a fleet well over 300 large transport category aircraft in accordance with Part 121 of Federal Aviation Regulations.

FedEx Express appreciates the opportunity to offer the following comments in regard to subject proposed rule. In general, FedEx is in favor of making modifications to its aircraft fleet that prove beneficial to improving safety and increasing efficiencies to its operations and to the Air Traffic Control Service. With regards ADS-B Out, FedEx has a basic understanding of how this technology will improve overall Surveillance, but is concerned that the basic ADS-B Out technology will not improve the efficiency of the ATC system that are being encountered in certain airspace corridors today. FedEx Express has participated in industry discussions coordinated by the Air Transport Association (ATA) and FedEx Express supports the comments submitted by the ATA.

FedEx Express will provide two categories of comments. The first category (General Comments) will provide comments to the concepts and proposals that are presented in the NPRM that go above and beyond the simple concept of implementing aircraft with ADS-B Out equipment. The second category (Specific Proposed Amendment Comments) will provide comments that are specifically proposed for amending Part 91 for basic equipment requirements of ADS-B Out.

## **General Comments**

**Issue:** The NPRM devotes a portion of its text discussing the Next Generation Air Transportation System (NextGen) and there are elements of the discussion that identify the Wide Area Augmentation System (WAAS) and ADS-B In to providing substantial benefits to operators.

**Comment:** At this time, FedEx does not fully understand how the benefits of only ADS-B Out will improve the current ATS or remedy the increased congestion expected in the future. FedEx expects additional capability (e.g. RNP) will need to be incorporated along with ADS-B Out to realize operational improvements over the current ATS system. While FedEx can accommodate equipping its aircraft with ADS-B Out, there are significant costs increases associated with upgrading ADS-B Out for WAAS capability and/or ADS-B In as potentially mentioned in the NPRM. The estimated cost difference for WAAS capability is a 400% increase in cost over ADS-B Out and for ADS-B In (w/ WAAS) a 700% increase. These estimated costs are simply to equip the aircraft and do not include lost revenue due to downtime for equipage. ADS-B In may necessitate display upgrades for certain fleets to accommodate Cockpit Display of Traffic Information (CDTI). Finally, CDTI needs to be evaluated to understand the additional monitoring responsibility and workload placed on the flight crew.

At this time, the FAA does not propose to mandate ADS-B In nor has the FAA quantified if there are benefits to ADS-B In to improving the NAS operations.

**Recommendation:** FedEx requests that the FAA reconsider the ADS-B Out mandate until ADS-B Out is evaluated with the ADS-B Out ground infrastructure scheduled for 2013. FedEx requests that the FAA provide financial incentives for the airline industry to accelerate the equipage of a number of aircraft with ADS-B Out and evaluate the system soon after 2013. A fully integrated evaluation will help the industry identify the benefits of ADS-B Out and if the additional cost for WAAS and ADS-B In need to be considered to improve the operational efficiency of the ATS. There is precedent for such an evaluation as a similar approach was taken with the Traffic Collision and Avoidance System (TCAS).

**Issue:** The FAA proposes a system which has different links for different classes of users; the dual link, 1090 MHz for transport aircraft with a RTCA DO-260a compliant transponder and UAT for general aviation aircraft.

**Comment:** The initial system requires a rebroadcast of the traffic information from transport aircraft to General Aviation aircraft and vice versus in order for each to be aware of the other. There is no reduction in the amount of avionics required on the aircraft. In fact there is additional avionics required in many cases and upgrading of avionics in all cases. Additionally there is no reason to believe that the requirements as stated in the NPRM are the end state envisioned by the FAA as there is much research needed. The continued evolution that ADS-B In will be in our future will certainly lead to more avionics requirements in equipage and certification as well as additional displays with their inherent disruptions to flight decks and revenue service. This dual link will require significant automation to marry

the two links and could possibly impact the separation criteria between aircraft derived from ADS-B position.

**Comment:** The NPRM requires a RTCA/ DO-260A compliant transponder, where other areas of the world have utilized the RTCA/DO-260 compliancy (the present equipage of most current transport aircraft).

**Recommendation:** The FAA should establish a formal workgroup with all segments of industry to choose an ADS-B demonstration program/site that includes both ADS-B broadcasts from both 1090 MHz and UAT equipped aircraft. Coordination with individual carriers or segments of aviation would only fracture and slow the process. Such a demonstration would provide factual benefits and concepts for the future of ADS-B Out applications.

**Issue:** The FAA proposes a NIC value requirement of 7.

**Comments:** The FAA proposes a NIC value of 7 which can be impacted by the number of satellites available. There has been considerable industry discussion that flights into ADS-B exclusionary airspace would need to validate accommodation to the required level prior to each flight, unless that aircraft were WAAS equipped. The NPRM states “Presently, GPS augmented by the Wide Area Augmentation System (WAAS) is the only navigation position service that provides the level of accuracy and integrity (NIC, NACp, and NACv) to enable ADS-B Out to be used for NAS-based surveillance operations with sufficient availability” WAAS is not available worldwide and thus the NPRM does not promote a harmonized, thus more costly to the user, universal ADS-Out standard.

**Recommendation:** Considerable knowledge and/or research have been gained by the Australian ADS-B usage and the proposed Hudson Bay ADS-B requirement. A universal standard is recommended for development to promote cost effective aircraft utilization.

### **Specific Comments on Amending Part 91**

#### **§91.225 Automatic Dependent Surveillance-Broadcast (ADS-B) Out Equipment and use.**

**Issue:** The FAA proposes to require all aircraft operations within US airspace to be equipped with ADS-B Out equipment after January 1, 2020.

**Comment:** FedEx has little concern with its technical ability to equip its fleet with ADS-B Out equipment by 2020; however, FedEx does not concur that the communication of additional Broadcast Message Elements will provide the NextGen ATS system with performance enhancements over today’s ATC system. The FAA has not communicated specifics of how ADS-B Out will provide a reduction in separation standards to alleviate even current congestion issues. It is also not understood by FedEx how additional broadcast message elements will be utilized by the ATC to make productivity enhancements in the future. Finally, the ADS-B system will not be owned by the FAA but will fall under a

service contract. FedEx has concerns that in the future, fees may be charged to users of the system. These fees are not projected or captured in the NPRM.

**Recommendation:** FedEx requests that the FAA reconsider the ADS-B Out mandate until ADS-B Out is evaluated with the ADS-B Out ground infrastructure scheduled for 2013. FedEx requests that the FAA provide financial incentives for the airline industry to accelerate the equipage of a number of aircraft with ADS-B Out and evaluate the system soon after 2013. A fully integrated evaluation will help the industry identify the benefits of ADS-B Out and evaluate the latency of equipment available for ADS-B Out.

### **Closing Comments**

As previously stated, FedEx is in favor of making modifications to its aircraft fleet that prove beneficial to improving safety and increasing efficiencies to its operations and to the Air Traffic Control Service. FedEx believes that the FAA needs to conduct evaluations of the ADS-B Out ground infrastructure after 2013 by providing incentives for the industry to install ADS-B Out equipment. The evaluation will allow the FAA to verify its assumptions regarding separation standards and ATC productivity enhancements. Finally, the evaluation will confirm if additional costs are necessary to implement additional technology (e.g. WAAS, ADSB-In, CDTI) and/or enhanced aircraft navigational performance.