



International Civil Aviation Organization

**FIFTEENTH MEETING OF THE ADS-B STUDY AND IMPLEMENTATION
TASK FORCE (ADS-B SITF/15)**

Bangkok, Thailand, 18 - 20 April 2016

**Agenda Item 4: Review States' activities and interregional issues on implementation of
ADS-B and multilateralism**

**U.S. ADS-B EQUIPAGE MONITORING AND
POST-INSTALLATION PERFORMANCE ISSUES**

(Presented by United States/Federal Aviation Administration)

SUMMARY

This paper refers to a presentation providing a summary of the number of aircraft in U.S. Airspace identified as being equipped with DO-260B or DO-282B ADS-B Out equipment. Additionally, the paper outlines a number of issues identified with ADS-B installations which may be of interest to this meeting.

1. INTRODUCTION

1.1 This paper refers to a presentation providing a summary of the number of aircraft in U.S. Airspace identified as being equipped with DO-260B or DO-282B ADS-B Out equipment and equipage trends for general aviation and air carrier aircraft. Furthermore, the paper outlines a number of issues identified with ADS-B installations which may be of interest to this meeting

2. DISCUSSION

2.1 This paper refers to the attached presentation titled U.S. ADS-B Equipage Monitoring and Post-installation Performance Issues. The information contained in the presentation provides an overview of the number of aircraft that have currently been identified in U.S. Airspace as being ADS-B Out DO-260B or DO-282B equipped.

2.2 The presentation shows ADS-B Version 2 equipage growth trends for U.S. General Aviation and U.S. Air Carrier aircraft and compares those trends to assumed equipage targets for January 1, 2020. These growth trend charts are used to inform the FAA and stakeholders on the progress toward total equipage for the ADS-B Out mandate.

2.3 There currently exist a number of installation and configuration issues that have been identified by the Federal Aviation Administration (FAA) with these installations. Most of the issues have been identified through data provided by the FAA Performance Monitor. Using that data, the FAA works with manufacturers, installers and operators to identify and rectify the causes of the issues. The presentation provides a summation of those issues and causes.

3. ACTION REQUIRED BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper and associated presentation; and
- b) discuss any relevant matters as appropriate.

U.S. ADS-B Equipage Monitoring and Post-installation Performance Issues

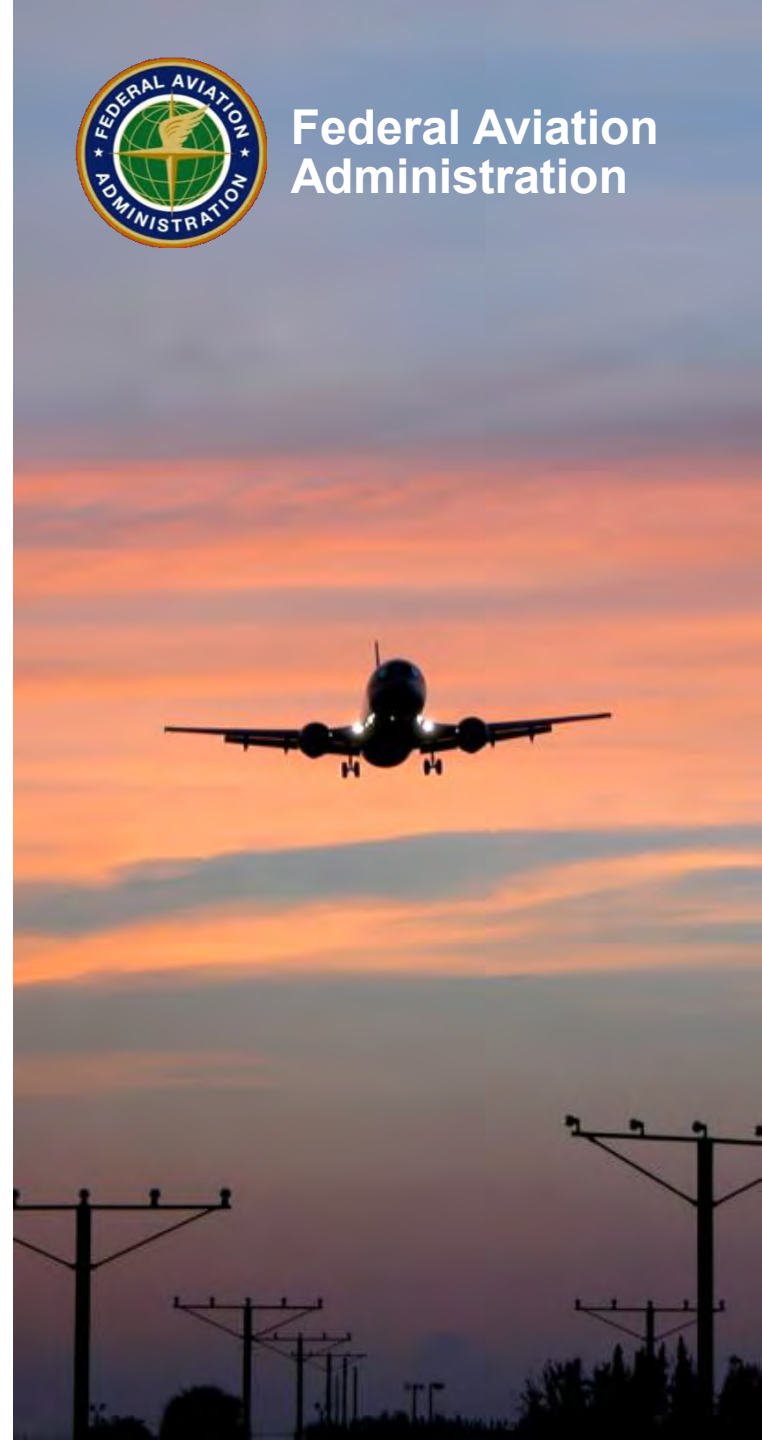
Presented at: ADS-B SITF/15, Bangkok, Thailand

Presented by: United States/ FAA

Date: April 18, 2016



Federal Aviation
Administration



Equipage Monitoring

Category	As of 1-Mar-2016	As of 1-Apr-2016	Monthly Increase		% of estimated fleet equipped^, as of 1-Apr-2016
Link Version 2	20,253	21,312	+1,059	5.2%	
1090ES	14,504	15,269	+765	5.3%	
UAT	5,055	5,270	+215	4.3%	
Dual	694	773	+79	11.4%	
US General Aviation	17,528	18,419	+891	5.1%	11.5% - 18.4%
US Air Carrier	477	517	+40	8.4%	8.6% - 10.3%
Intl General Aviation*	1,915	1,974	+59	3.1%	
Intl Air Carrier	261	331	+70	26.8%	
U.S. Military & U.S. Special Use	72	71	-1**	-1.4%	

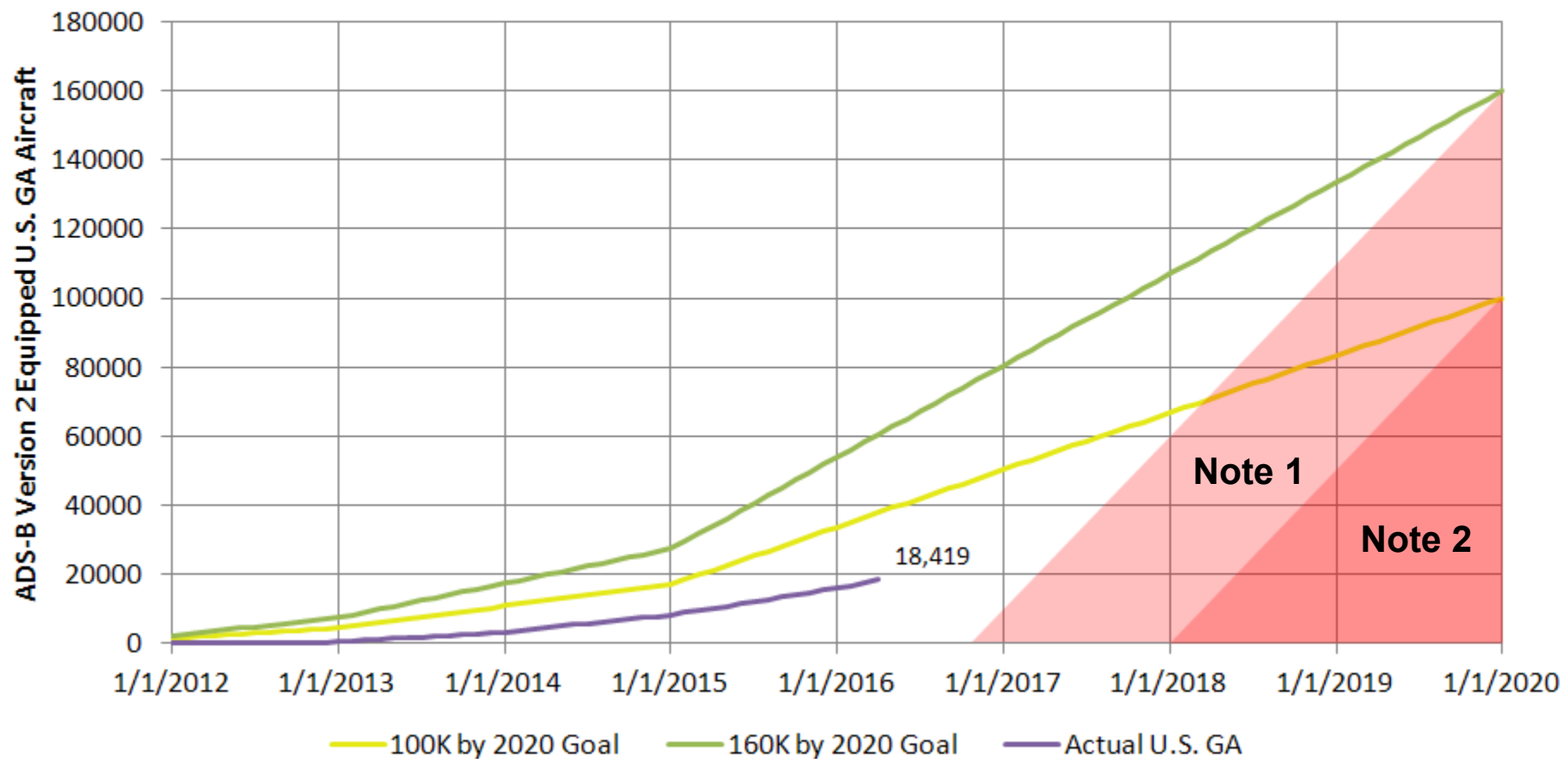
<http://www.faa.gov/nextgen/equipadsb/equipment/monitoring/>

*Aircraft incorrectly reporting outside US ICAO block are included in Intl GA count.

^percentage range based on estimates of 5,000-6,000 US air carrier aircraft and 100K-160K US general aviation aircraft

**Aircraft not seen in over two years are purged from list

ADS-B Out Version 2 Equipage U.S. General Aviation Actuals vs 100K and 160K by 2020 Goals

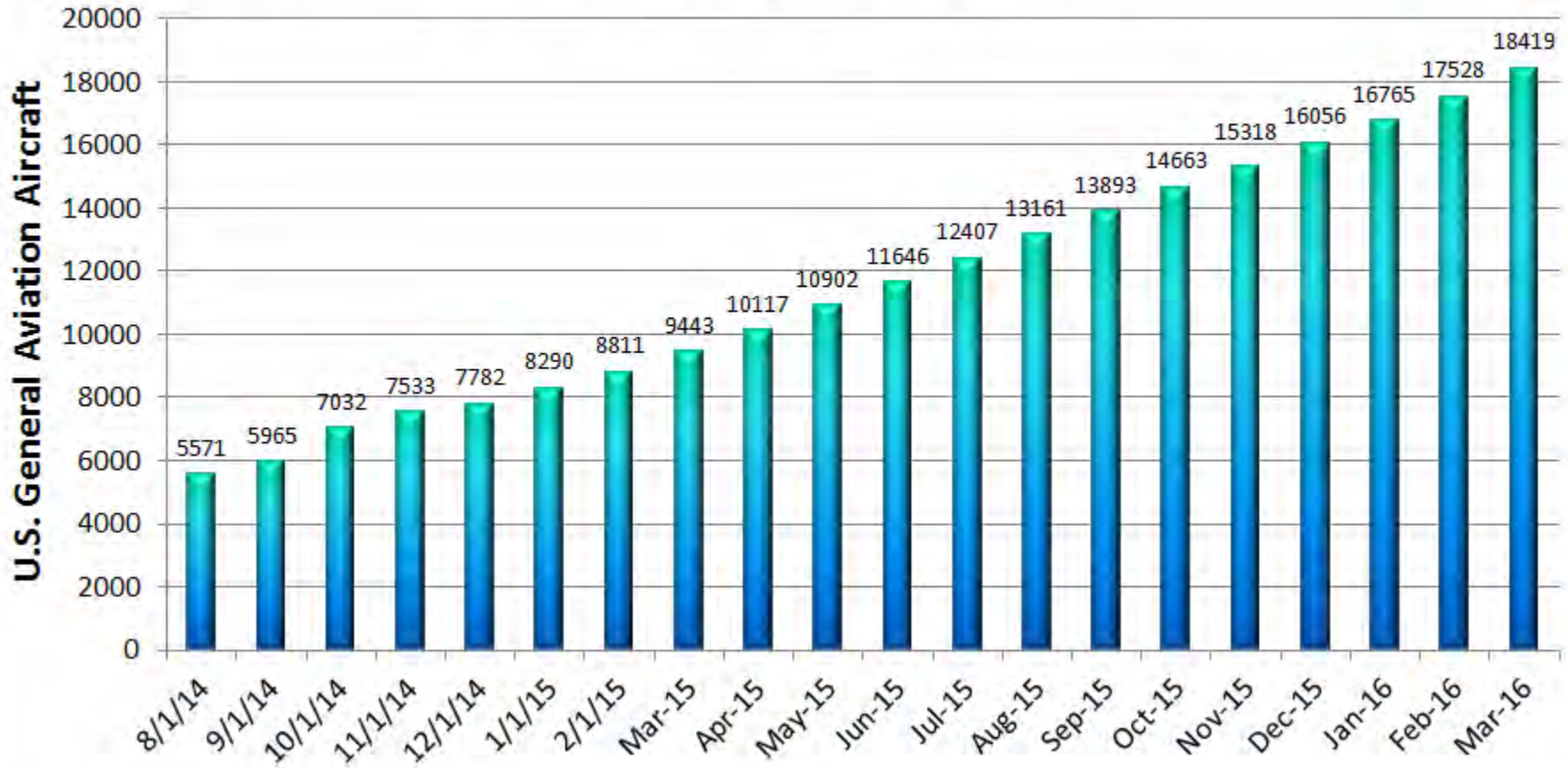


Note 1 – “danger zone” for 160K aircraft goal, assuming max equipage rate of 50K aircraft/year

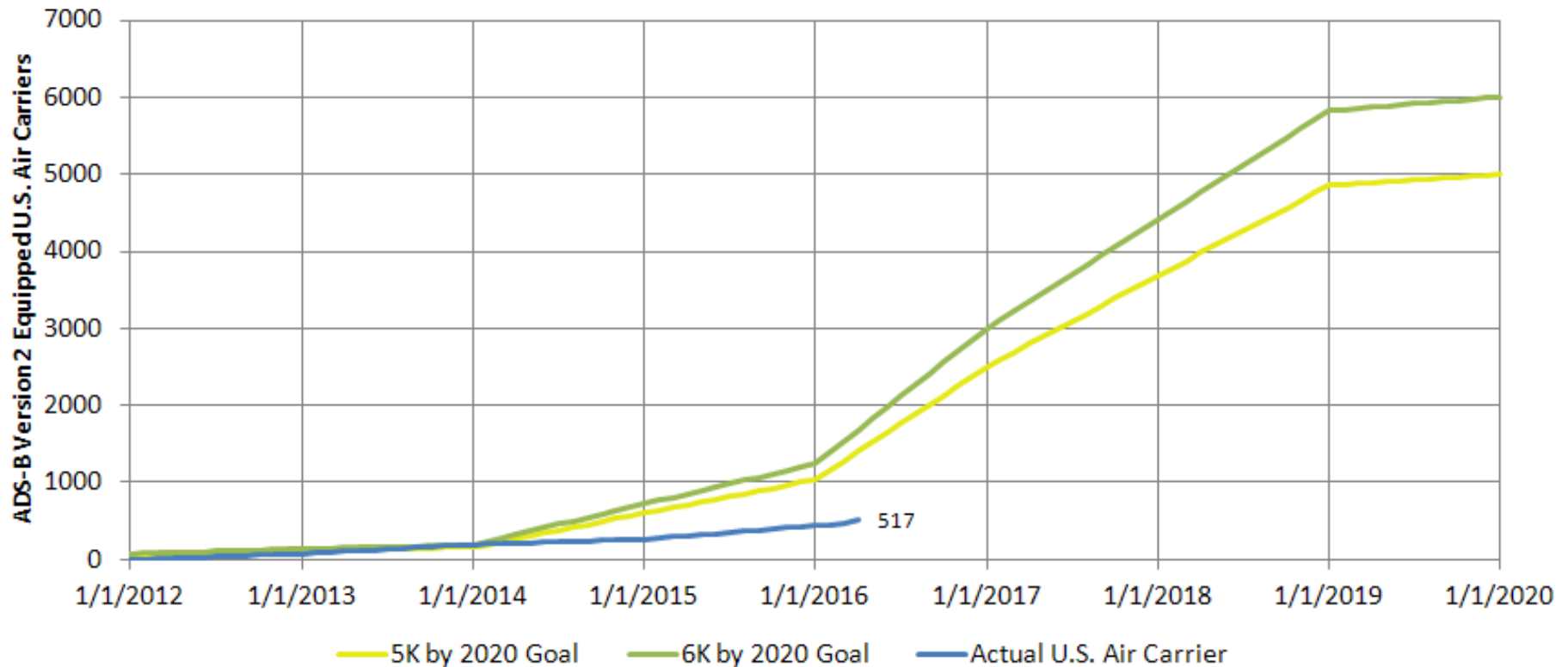
Note 2 – “danger zone” for 100K aircraft goal, assuming max equipage rate of 50K aircraft/year

ADS-B Link Version 2 U.S. General Aviation Growth

ADS-B Link Version 2 Equipage - Historical Data
U.S. General Aviation

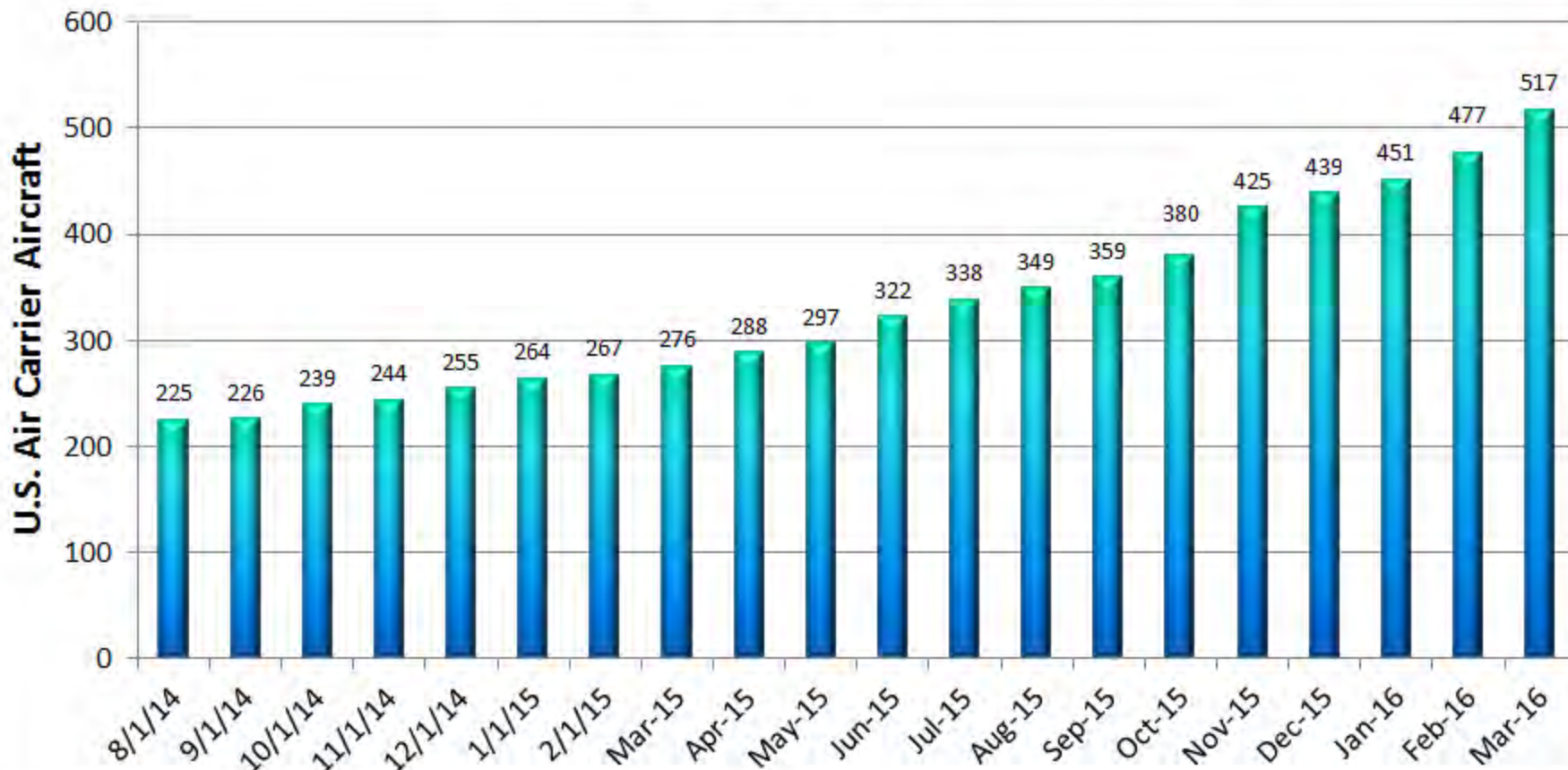


ADS-B Out Version 2 Equipage U.S. Air Carriers Actuals vs 5K and 6K by 2020 Goals



ADS-B Link Version 2 U.S. Air Carrier Growth

ADS-B Link Version 2 Equipage - Historical Data
U.S. Air Carrier



ADS-B Performance Monitor

- **Generates two types of reports**
 - Compliance report
 - Certification report
- **Performance report for field approvals and post installation performance verification**
 - E-mail: 9-AWA-AFS-300-ADSB-AvionicsCheck@faa.gov
- **Certification report for certification of ADS-B systems per AC 20-165A section 4-3 a (1)**
 - E-mail: 9-avs-air-130flttest@FAA.gov

ADS-B Post-Installation Performance Issues

Issue	Causes	Affected Links
Missing Barometric Pressure Altitude	Wiring, portable transmitters	UAT
Duplicate & Invalid ICAOs	Factory default, improper configuration	1090ES & UAT
Intermittent or Missing Mode 3/A Code	UAT sniffer fault, wiring, configuration error	UAT
Flight ID	Configuration error, pilot entry error	1090ES & UAT
Air/Ground Determination Issues	Squat switch, configuration error, software issues	1090ES & UAT
UTC Toggling	Software	UAT
Mode 3/A Instability	UAT sniffer fault	UAT
Incorrect Emitter Category	Configuration error	1090ES & UAT
Invalid Position with Compliant NIC/NAC/SIL	Improper component software loads	1090ES
Non-compliant NIC/NAC/SIL/SDA	Configuration error, improper component software loads	1090ES/UAT