



**FEDERAL AVIATION  
ADMINISTRATION**

## **Annual Report (2016)**

**FAA Modernization and Reform Act of 2012 (P.L. 112-95) –  
Section 308, Inspection of Repair Stations Located Outside the  
United States**

## **FAA ANNUAL REPORT**

### **REPAIR STATION SURVEILLANCE, STAFFING, TRAINING and INTERNATIONAL AGREEMENTS**

Section 308 of the FAA Modernization and Reform Act of 2012 (Public Law 112-95) (the “Act”) requires the Federal Aviation Administration (FAA) to publish an annual report on FAA’s oversight of part 145 repair stations and implementation of the safety assessment system required under Title 49 United States Code §44733, subsection (a). This report describes the improvements in FAA’s ability to identify and track where part 121 air carrier repair work is performed and includes a staffing model of FAA aviation safety inspectors (ASI); describes the training provided to FAA ASIs; and contains an assessment of the quality of surveillance performed by FAA ASIs and inspectors from countries in which the FAA has a bilateral agreement.

#### **(1) Describe in detail any improvements in the Administration’s ability to identify and track where part 121 air carrier repair work is performed.**

The FAA regulations authorize air carriers to make arrangements with other maintenance providers to perform its maintenance.<sup>1</sup> The air carrier is primarily responsible for the airworthiness of its aircraft, whether the maintenance is performed by the carrier or contracted to another person. The FAA regulations require that maintenance performed by either an air carrier or by another person(s), such as a contract maintenance provider, must be performed in accordance with the air carrier’s continuous airworthiness maintenance program (CAMP) and its maintenance manual. In addition, the air carrier is required to document in its maintenance manual a listing of maintenance providers with whom it contracts maintenance and a general description of the work to be performed. However, we have noted deficiencies in that the air carriers often fail to provide the necessary instructions that enable maintenance providers to follow the air carriers’ CAMP and maintenance manual. The FAA has also found that the required listings of contract maintenance providers are not always kept up to date and/or in a standard format that is readily useful for FAA oversight and analysis purposes. Without accurate and complete information on the maintenance being accomplished for air carriers, the FAA cannot accurately target inspection resources for surveillance.

To improve FAA’s oversight of air carrier’s contract maintenance, FAA published new rulemaking<sup>2</sup> which is effective on March 4, 2016.<sup>3</sup> This rulemaking requires affected air

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<sup>1</sup> Unless otherwise indicated, when we refer to “maintenance”, the term is meant to include “maintenance, preventive maintenance, and alteration.”

<sup>2</sup> The final rule was published in the Federal Register on March 4, 2015, docket number FAA-2015-04179, titled Air Carrier Contract Maintenance Requirements.

<sup>3</sup>The final rule; corrected, was published in the Federal Register on May 4, 2015, docket number FAA2015-10423, titled Air Carrier Contract Maintenance Requirements; Corrected. The FAA made the effective date of the rule one year after its publication date to give affected air carriers time to come into compliance with the new rulemaking.

carriers to develop policies, procedures, methods, and instructions for performing contract maintenance that are acceptable to the FAA, and to include them in their maintenance manuals. Additionally, the rule requires that air carriers who contract maintenance provide a maintenance provider list (MPL). The MPL includes (1) the name and physical address, or addresses, where the work is carried out for each maintenance provider that performs work for the air carrier, and (2) a description of the type of work performed at each location. The MPL must be updated by the last day of each calendar month in a format acceptable to the FAA and include any changes, including additions or deletions. This information will reside in the Safety Assurance System (SAS) Configuration Module Vitals database to be used by the FAA for planning and targeting surveillance activities of each air carrier's contract maintenance providers. The FAA is developing two standardized MPL templates which will be available for air carriers to download from the Flight Standards Service (AFS), Aircraft Maintenance Divisions' public website. These templates will provide a standardized, seamless method for FAA inspectors to import an air carrier's MPL into SAS.

Data reported and analyzed as a result of this rulemaking will leverage the FAA inspector workforce's risk-based decision making process, resulting in targeted surveillance focused on areas of greater concern or criticality. The FAA's next generation risk-based oversight system, SAS, continues to make steady implementation progress and full deployment of SAS for Title 14 of the Code of Federal Regulations (14 CFR) parts 121, 135, and 145 was accomplished on December, 2015.

**(2) Include a staffing model to determine the best placement of inspectors and the number of inspectors needed.**

The AVS Staffing Tool and Reporting System (ASTARS) model is a tool to assist management in identifying staffing requirements for inspectors. The current AFS ASTARS Model predicts the staffing requirement of non-supervisory aviation safety inspectors (ASIs) residing in Flight Standards District Offices (FSDOs) and Certificate Management Offices (CMOs) at the national level. The most current results will be contained in the 2016 Aviation Safety Workforce Plan.

The FAA is currently researching various models aimed to assist in management allocation decisions below the national level. However, those models are not of sufficient maturity to report results for how many ASIs are required to oversee one particular type of aviation entity operating in one particular geographic location.

This past fiscal year, Aviation Safety (AVS) made improvements in the quality of the data that feeds the AFS ASTARS Model, especially the Labor Distribution Reporting (LDR) data. The time measurements provided by LDR are important as this data is the agency's sole source for the effort required to complete a work activity.

In the coming fiscal years, the ASTARS model will continue to be refined and improved to assist in forecasting the appropriate number of ASIs required for all aviation safety activities.

**(3) Describe the training provided to inspectors.**

A newly hired airworthiness aviation safety inspector (ASI) is trained under two aviation specialties: Air Carrier Airworthiness (AC A/W) and General Aviation Airworthiness (GA A/W). Each has a specialized curriculum which utilizes a blended approach by providing prerequisite regulatory guidance as web-based training (WBT). This is then reinforced in the classroom training which utilizes hands on practical scenarios that reinforce the application of regulations in real life situations.

Once the formal training is completed, an AC A/W ASI will have completed 120½ hours of WBT and 49½ days of classroom training while the GA A/W ASI will have received 101½ hours of WBT and 51½ days of classroom training. This training includes material pertinent to part 145 repair stations as well as 4½ days of classroom training dedicated solely to the part 145 repair stations.

Formal training occurs in six phases within the first year of employment. The WBT is held at the employee’s worksite and the classroom courses are completed at the FAA Mike Monroney Aeronautical Center Training Academy in Oklahoma City, OK.

<b>Phase</b>	<b>AC A/W ASI</b>	<b>GA A/W ASI</b>
<b>Phase I</b>	WBT – 27½ hours of regulatory content preparing the ASI for job functions expected to be accomplished in the first 180 days.	WBT – 27½ hours of regulatory content preparing the ASI for job functions expected to be accomplished in the first 180 days.
<b>Phase II</b>	Classroom – 24 days of formalized practical application designed to reinforce the regulatory guidance and provide job function application to include safety management and international aviation.	Classroom – 24 days of formalized practical application designed to reinforce the regulatory guidance and provide job function application to include safety management and international aviation.
<b>Phase III</b>	WBT – 34 hours of primarily AC specific job function training including maintenance/inspection programs and a variety of specialized functions.	WBT - 36 hours of primarily GA specific job function training including maintenance/inspection/programs and maintenance facilities/providers.
<b>Phase IV</b>	Classroom - 14 days of hands-on practical application specific to assigned job functions to include maintenance organizations.	Classroom – 13 days of hands-on specific to job functions to include airworthiness technical core and a practical application workshop.
<b>Phase V</b>	WBT – 59 hours of advanced AC specialized topics based on job function.	WBT – 38 hours of advanced GA specialized topics based on job function.

<b>Phase</b>	<b>AC A/W ASI</b>	<b>GA A/W ASI</b>
<b>Phase VI</b>	Classroom – 11½ days including 5 days of Certification and Surveillance of part 145 Repair Stations.	Classroom – 14½ days including 5 days of Certification and Surveillance of part 145 Repair Stations.
<b>Total</b>	<p style="text-align: center;"><b>WBT</b> 120½ hours</p> <p style="text-align: center;"><b>Classroom</b> 49½ days</p>	<p style="text-align: center;"><b>WBT</b> 101½ hours</p> <p style="text-align: center;"><b>Classroom</b> 51½ days</p>

On the job training (OJT) is an ongoing formalized program the AFS uses to continually expand ASI proficiency in their specialty. OJT must be accomplished through 3 levels. In level 1, the employee must demonstrate the knowledge required for the task. In level 2, the employee must demonstrate an understanding of that knowledge, and in level 3, the employee must successfully perform the specific job task.

An airworthiness ASI who is assigned oversight of a part 145 repair station receives targeted OJT prior to accomplishing any associated job tasks. Proficiency must be successfully demonstrated in the following skills prior to any assignment of duty:

- Inspect a 14 CFR Part 145 Repair Station’s Inspection Procedures Manual/Revision
- Inspect a 14 CFR Part 145 Foreign Repair Station
- Inspect a 14 CFR Part 145 Repair Station’s Personnel Records
- Inspect a 14 CFR Part 145 Repair Station’s Facilities and Equipment
- Evaluate a 14 CFR Part 145 Operator’s SFAR 36 Authorization
- Evaluate a 14 CFR Part 145 Repair Station/Applicant’s Facilities and Equipment
- Evaluate a 14 CFR Part 145 Repair Station/Applicant’s Inspection Procedures Manual/Revision
- Certicate a 14 CFR Part 145 Foreign Repair Station
- Evaluate a 14 CFR Part 145 Repair Station and Quality Control Manual(s) Revision
- Certicate a 14 CFR Part 145 Repair Station/Satellite Located Outside the U.S. and its Territories

The successful completion of the formalized WBT, classroom courses, and OJT enable the ASI to be competent in the performance of assigned job functions. To maintain currency, the ASI is required to attend recurrent training as set by the policy organization and advanced training as needed based on job assignment.

**(4) Include an assessment of the quality of monitoring and surveillance by the Administration of work performed by its inspectors and the inspectors of foreign authorities operating under a maintenance safety or maintenance implementation agreement.**

The FAA will inspect over 4,750 repair stations in 2016. There are over 4,000 domestic and 750 foreign FAA certificated repair stations. The numbers vary from year to year based on new repair station certifications and repair stations that go out of business, merge, move, or are acquired by other companies. The FAA AFS personnel perform a variety of data collection, analysis, and assessment activities to assure those repair stations' systems meet regulatory and safety management requirements and objectives. The FAA inspector must perform surveillance on FAA-certificated repair stations outside of the United States (U.S.). The inspections are planned and conducted based on the type and complexity of the operation and the aviation safety agreements, if any, established between the U.S. and the foreign aviation authority.

The FAA certificated repair station surveillance requirements are established from the FAA Order 8900.1, Flight Standards Information Management System (FSIMS). This order identifies specific work functions that the FAA AFS management team and inspectors must accomplish to provide a baseline of information and the appropriate assurances to assess the soundness of the aviation system. The policy and guidance in this order assists FAA inspectors in planning their work program by prioritizing surveillance activities based on previous data analysis and inspector expertise with respect to certificate holder operations. Its purpose is to control the risk of undetected failure within critical systems, and ensure that possible latent risks caused by deficiencies do not remain undetected.

Every FAA certificated repair station, regardless of its location, is inspected with a risk-based, data-supported oversight system called the SAS. The SAS is the safety assurance component of the Safety Management System (SMS); it provides a comprehensive, standardized approach to the oversight of aviation certificate holders. This system provides a set of business processes to meet AFS safety responsibilities for both design and performance assurance. It is a decision support system based on system safety principles, safety attributes, and a risk management process and reflects the evolution of oversight to a more proactive approach. This system not only allows FAA inspectors to make independent assessments, but also supports data sharing, collaboration, and open communication. The SAS tools assist in validating that the certificate holder has a robust system to ensure the utmost safety is designed into their organization.

The SAS assists FAA inspectors (1) quantify risks associated with hazards inherent in a certificate holder's operation, resulting in more accurate decisions concerning the need for new or revised risk controls, and (2) manage their work more effectively by prioritizing work activities based on calculated risk and targeting areas that present an elevated risk. This system permits a certificate holder to suggest limited changes to their operating profile through the external portal. This will ultimately reduce data entry for FAA inspectors and allow them to fully consider the implications of proposed changes a certificate holder wishes to make. The SAS prioritizes inspection tasks based on oversight priorities at the certificate holder and national level. It also allows consolidation and analysis of data at a national level in order to identify areas of greatest oversight priority. Lastly, the SAS establishes a standardized process for certification

and oversight. It is the major tool for managing a risk-based work program and is the foundation for a data-driven approach to safety.

FAA inspections are based on the regulatory requirements of Title 14 CFR Part 145, Repair Stations. The FAA inspector's first step is to prepare for data collection to ensure that the certificate holder's or applicant's system complies with the intent of the regulations and safety standards. The SAS provides the foundation for the Data Collection Tools (DCT) that the FAA inspector uses to collect data to make informed decisions about the certificate holder's or applicant's operating systems, including considerations of possible risks.

These DCTs are divided into two Master List of Function (MLF) groups as described in Volume 10 of FAA Order 8900.1. The MLF forms the basis for the system-based approach in SAS, providing a common structure for 14 CFR parts 121, 135, and 145 certificate holders. Analysis of the SAS elements aids in determining the overall risk. The elements to be used from the master list of functions is dependent on varying factors which are based on risk assessment. The elements include, but are not limited to the maintenance performed for a part 121 air carrier. Typically, an inspector will conduct surveillance activities for several of these elements on the same day. Larger and more complex repair stations require the use of inspector resources on a more frequent basis, whereas smaller repair stations with fewer employees and less complex maintenance activities generally require less inspector resources in comparison to the larger repair stations.

In addition to SAS, the Safety Performance Analysis System (SPAS) is available for use in the development of oversight activities. This data provides additional information on performance and risk associated with individual repair station facilities. Whenever FAA analysis determines an increased level of risk and a corresponding decrease in the safety margin, the FAA increases its level and intensity of surveillance. For example, when an operator is under financial stress (such as bankruptcy) or experiences labor issues, the FAA will increase overall surveillance to ensure the maintenance and other safety related tasks are being properly done.

An FAA inspector is not required to give notice prior to an inspection. However, an inspector may notify the repair station to ensure appropriate personnel are available and coordination is accomplished between the repair station and remote facilities or contractors subject to the inspection. In the case of repair stations located outside of the U.S., it's often necessary for the FAA to coordinate inspections with the approved maintenance organization (AMO) and its aviation authority.

FAA inspectors review paperwork and inspect the maintenance being performed on aircraft or component parts of aircraft within the repair stations ratings. Inspectors assigned to repair station surveillance ensure the facility has the proper manuals and paperwork of the air carriers it services, required equipment, and trained technicians to perform the job. Inspectors assigned to a CMO for an air carrier whose aircraft is having

maintenance performed at a repair station may also conduct inspections of that repair station if risk is identified.

The FAA Compliance Philosophy requires AFS personnel to engage in a solution-oriented, outcomes-based approach to identify safety issues and correct noncompliance. FAA inspectors are expected to use interdependence and critical thinking to evaluate the discrete facts of a particular situation, and then choose the best tool to fix the problem, consistent with regulations, policies, and the specific circumstances of each event.

Inspections resulting in less than satisfactory findings may be handled using the FAA's compliance tools, techniques, concepts, and programs. Some of the methods used are through the risk management process, compliance action, or conducting follow-up and in-depth inspections. They are part of the FAA inspector's available resources used to identify and mitigate an identified risk. It affords the inspector the ability to target those inspection elements that do not meet the minimum regulatory standards and focus his or her resources on those areas to gain compliance. The focus of the AFS workforce is to work with the parties involved to correctly identify and fix the root cause(s) of deviations or noncompliance.

On occasion, a repair station may be in violation of the FAA Federal Aviation Regulations (FAR) or demonstrate a non-compliant attitude. In these instances an investigation ensues and if warranted, a repair station may be issued an administrative enforcement action, such as a warning notice or a letter of correction; be fined a civil penalty; have its certificate suspended for a predetermined number of days pending compliance with the FAR; or have its certificate revoked.

### **FAA-Certificated Repair Stations Located Outside the U.S.**

In order to apply for FAA certification, a repair station located outside the U.S. must provide evidence that there is a need to provide maintenance for U.S. registered aircraft, or foreign registered aircraft operated under the provisions of U.S. part 121 or 135 certificate. The FAA recognizes that maintenance requirements are constantly changing due to contracted maintenance at repair stations or the result of aircraft ownership and lease agreements changes. If the repair station applicant does not have a need to work on U.S. registered aircraft, or cannot obtain documented evidence from a customer (aircraft lease arrangement or parts broker) for the need, then there is no reason for the FAA to invest resources for its certification or surveillance activities. The FAA calls this "demonstrating the need" for certification. In order to meet customer needs, many original equipment manufacturers have repair stations located outside the U.S.

Similar to repair stations located within the U.S., FAA-certificated repair stations located outside the U.S. are visited at least once a year by the repair station's principal inspector or assistant. Certificates for repair stations located outside the United States have a limited duration. Initial certification is limited to 12 months from the date the certificate is issued. Thereafter, the FAA will renew the certificate or rating for a 24 month period if the repair station has operated per the applicable requirements of part 145 within the



preceding period. FAA-certificated repair stations outside the U.S. must pay fees required under 14 CFR part 187.

The FAA may perform a follow-up inspection if risk indicators display a potential decrease in the safety margin. The risk management process detailed above, for the mitigation of identified risks, would be employed for systemic non-compliant elements.

### **Bilateral Agreements and the European Aviation Safety Agency (EASA)**

For those repair stations in countries where the U.S. has a Bilateral Aviation Safety Agreement (BASA, “the Agreement”), with Maintenance Implementation Procedures (commonly called BASA MIP), the host aviation authority, or its designees, will audit the repair stations on behalf of the FAA. In return, the FAA performs audits on behalf of those countries that have repair stations located in the U.S.

In June 2008, the Agreement was signed between the U.S. and the European Union (EU) to cooperate in the regulation of civil aviation safety. The Agreement entered into force in May 2011, and provided 24 months to complete the transitions and transfers which were completed on May 3, 2013.

The Agreement allows the FAA and EASA to rely on each other’s surveillance systems to minimize the duplication of efforts, increase efficiency, and conserve resources to the greatest extent possible. Annex 2 of the Agreement allows EASA and the FAA to accept each other’s standards, systems, and approvals relating to repair stations located in the U.S. and EU-based AMO that maintain civil aviation products. Annex 2 also explains how to establish points of communication and cooperation when urgent or unusual situations develop. The Agreement calls for the EU to complete the regularly scheduled FAA inspections. The FAA uses risk based concepts to target specific areas of elevated risk. The FAA and EASA have on-going discussions for harmonization of risk based oversight. The FAA and EASA must be satisfied that repair stations located in the U.S. and EU-based AMOs meet the conditions of Annex 2.

The Agreement covers 18 of the 27 EU member countries. Before entering into the bilateral agreement, the U.S. evaluated the aviation systems of the each country and determined which ones were equivalent to the FAA. The 18 countries included in the agreement are:

1. Austria
2. Belgium
3. Czech Republic
4. Denmark
5. Finland
6. France
7. Germany
8. Italy
9. Luxembourg

10. Malta
11. Netherlands
12. Poland
13. Portugal
14. Romania
15. Spain
16. Sweden
17. Ireland
18. United Kingdom of Great Britain and Northern Ireland

\* Hungary is currently being considered for inclusion into the U.S.-EU agreement.

The aviation authorities in those 18 countries, or their designees, inspect U.S. FAA certificated repair stations on behalf of the U.S. The FAA performs the same function in the U.S. for EASA-certificated repair stations. Inspections of FAA-certificated repair stations located outside the U.S. are conducted using the EASA regulations and the FAA special conditions agreed upon with the U.S and contained within the Maintenance Annex Guide. The special conditions address areas where the FAA and EASA have not harmonized safety standards.

To ensure both FAA and EASA are maintaining the quality of their inspections and reviewing the special conditions, FAA may participate in sampling inspections based on identified risk. FAA inspectors may also participate as observers with the National Aviation Authority, and EASA's Sampling Inspection System (SIS) team to an EU-based approved maintenance organizations to ensure their compliance with the BASA MIP.

The FAA agreement with the EU provides benefits for repair stations located within the U.S. Approximately 1,400 of the 4,018 FAA-certificated repair stations located within the U.S. today hold an EASA certification as well. Thus, an FAA inspection on behalf of EASA saves the U.S.-based repair station additional inspection and certification fees.

### **Bilateral Agreement with the Government of Switzerland Federal Office of Civil Aviation (FOCA)**

In April 2014, the Agreement was signed between the U.S. and the Government of Switzerland to cooperate in the regulation of civil aviation safety. The Agreement entered into force in July 2014, and provided 24 months to complete the transitions and transfers.

The Government of Switzerland has participated in EASA since December 1, 2006, on the basis of the Agreement of 1999 between the European Community and the Swiss Confederation on Air Transport. EASA enjoys in Switzerland the powers granted to it under the provisions of Regulation (EC) No. 216/2008 of the European Parliament and the Council of February 20, 2008, on common rules in the field of aviation.

The Agreement allows the FAA and the FOCA to rely on each other's surveillance systems to minimize the duplication of efforts, increase efficiency, and conserve

resources to the greatest extent possible. MIP allows FOCA and the FAA to accept each other's standards, systems, and approvals relating to repair stations located in the U.S. and EU-based AMO that maintain civil aviation products. The MIP also explains how to establish points of communication and cooperation when urgent or unusual situations develop. The MIP calls for the FOCA to complete regularly scheduled FAA inspections. The FAA uses FOCA surveillance data and populates the SAS risk based concepts to target specific areas of elevated risk. The FAA and FOCA have on-going discussions for harmonization of risk based oversight. The FAA and FOCA must be satisfied that repair stations located in the U.S. and Switzerland based AMOs meet the conditions of the MIP.

To ensure both FAA and FOCA are maintaining the quality of their inspections and reviewing the special conditions, FAA may participate in sampling inspections based on identified risk. FAA inspectors may also participate as observers with the National Aviation Authority, and EASA's SIS team to a Swiss based approved maintenance organizations to ensure their compliance.

### **Bilateral Agreement with the Republic of Singapore Civil Aviation Authority of Singapore (CAAS)**

In January of 2014, the U.S entered into formal negotiations with the Republic of Singapore. The MIP is currently nearing the finalization process and is scheduled to be signed in February 2016.

The MIP will allow the CAAS to conduct inspections of FAA part 145 repair stations located in Singapore on behalf of the FAA. This will lower the cost of conducting inspection for the FAA, reducing duplicate inspections at these facilities while maintaining a high level of safety. The Singapore MIP will be very similar to the agreement FAA has with the European Union for part 145 facilities.

There will be a 24 month period for the turnover of FAA certificates to the CAAS. There are approximately 57 FAA certificated repair stations in Singapore, and 6 Singapore facilities in the U.S.

To ensure both FAA and CAAS are maintaining the quality of their inspections and reviewing the special conditions, FAA may participate in sampling inspections based on identified risk. FAA inspectors may also participate as observers with the CAAS Sampling Inspection System (SIS) team to a Singapore-based approved maintenance organizations to ensure their compliance.