

CONTRACT MAINTENANCE AND FOREIGN REPAIR STATIONS: THE FACTS

The Aeronautical Repair Station Association (ARSA)¹ provides policymakers and the media information about the scope and breadth of the aviation industry and its use of contract maintenance in the United States and abroad. This document cites laws, facts and data to explain the contract maintenance industry's positive contributions to safety and the economy and refutes allegations that it threatens aviation safety, security and jobs.

Global aviation is highly regulated; no person may design, produce, operate or maintain a civil aviation product without appropriate approvals and authorities from the country of registry.²

The highly regulated and scrutinized international civil aviation industry has a significant economic footprint. It includes—

- Private and business domestic and international operations
- Regional and commuter domestic and international operations
- Domestic air carrier passenger and cargo operations
- International air carrier passenger and cargo operations

An aircraft cannot fly without having required maintenance performed and approved for return to service by appropriately qualified and certificated individuals and companies.

The global aviation maintenance industry—

- Employs [288,000 Americans](#) at repair stations, airlines and manufacturers.
- Contributes [\\$50 billion](#) annually to the U.S. economy.
- Includes more than [4,000 Federal Aviation Administration \(FAA\) certificated repair stations](#) in the United States that—
 - Are 80 percent small business entities.
 - Employ more than [188,000 people](#).
 - Generate [\\$25 billion](#) in annual economic activity.

Underscoring the importance of the international market for the U.S. maintenance industry—

- More than [one-third of U.S. repair stations](#) hold approvals from foreign civil aviation authorities to perform work on products and articles under the jurisdiction of other countries.
- Of the FAA-certificated repair stations that are [outside the United States](#) (“foreign” or “international” repair stations), many are operated by leading U.S. companies to support a growing global customer base and U.S. foreign operations.

¹ ARSA's primary members are companies certificated by the FAA pursuant to [14 CFR part 145](#) and by other civil aviation authorities to perform maintenance, preventive maintenance and alterations on civil aviation products (the regulatory term for aircraft, engines and propellers) and related articles (all components installed on the aircraft). The association's members also include manufacturers, airlines, educators, industry service providers and others with an interest in legislative and regulatory issues impacting aviation.

² See, e.g., Title 14 Code of Federal Regulations (CFR) parts 1 to 100 showing compliance with [Annex 6 to the Convention on International Civil Aviation, Chapter 8.1 \(“Operator's maintenance responsibilities”\)](#): “Operators shall ensure that, in accordance with procedures acceptable to the State of Registry: a) each aeroplane they operate is maintained in an airworthy condition; b) the operational and emergency equipment necessary for an intended flight is serviceable; c) the Certificate of Airworthiness of each aeroplane they operate remains valid.”

Contents

(I) Executive Summary..... 1

(II) Background 1

(III) AVIATION SAFETY FACTS 2

 (A) Contract maintenance in general – and foreign repair stations in particular – does not threaten aviation safety. 2

 (B) Airlines do not use repair stations to cut corners and avoid U.S. safety rules. ... 2

 (C) The *countries* in which foreign repair stations are located do not need higher standards than the United States..... 2

 (D) Aircraft maintenance is not being performed by uncertificated entities that are beyond the jurisdiction of the FAA. 2

 (E) Work performed by repair stations – especially those outside the United States – is not inferior to the work performed by mechanics employed by airlines. 3

 (F) Repair stations outside the United states must meet the same standards as U.S. repair stations (i.e., there is not a “second, inferior set of safety standards for aircraft maintained outside of the United States”). 3

 (G) Mechanics working at foreign repair stations have equivalent knowledge and capabilities as those certificated by the FAA. 3

 (H) All employees performing maintenance for air carriers may not be subject to drug and alcohol (D&A) testing..... 4

 (I) Foreign repair stations are required to conduct security background checks on their employees. 4

 (J) Foreign repair stations are subject to FAA inspections. 5

 (K) Contract maintenance is not sending U.S. maintenance jobs overseas..... 6

 (L) The increased use of contract maintenance has not cost U.S. jobs..... 6

 (M) Foreign repair stations serve many purposes and are not used merely to give U.S. carriers access to cheap maintenance services. 7

 (N) The suggestion that offshoring of aviation maintenance work has cost the U.S. economy 8,200 jobs is unsupportable. 7

(IV) *ADDITIONAL RESOURCES* 7

(I) Executive Summary

The purpose of this document is to refute incorrect assertions, address concerns and improve policymaker and media understanding about a complex international legal and economic topic: aviation maintenance. The maintenance industry helps make global air travel safe, accessible and economical. Although it often operates beyond public view, the maintenance industry is highly regulated and closely scrutinized by regulators, airline customers and third-party auditors.

Repair stations employ hundreds of thousands of Americans, many of whom are working at companies that serve a global customer base. Lawmakers must therefore understand the complex system that regulates the industry and be mindful of the economic and safety consequences of policy decisions, which will be felt in communities throughout the country. The association welcomes inquiries about compliance with international civil aviation safety requirements. For more information contact ARSA Executive Vice President Christian A. Klein at christian.klein@arsa.org or 703.739.9543.

(II) Background

The use of contract maintenance is not new. Private and business aircraft owners rarely perform their own maintenance. Air carriers and commercial operators rarely had – or have – total in-house capabilities. Recent successful carriers did not start with, nor are now contemplating, total in-house capabilities.

The concept that the use of contract maintenance is increasing is a myth. The market has been relatively stable for almost two decades. Its success has contributed to improved airline safety, efficiency and profitability. The global network of FAA-certificated repair stations ensures an American operator can fly safely and reliably to new and varied destinations.

U.S. laws and regulations apply to aircraft entering the nation’s airspace. If an aircraft is registered in the United States and issued a U.S. airworthiness certificate, the design, production, operations and maintenance are completely controlled by the FAA no matter where the aircraft is flown. That executive agency has established regulations, provided guidance and enforced congressional mandates that have resulted in the safest form of transportation in the world.

The international civil aviation safety system is appropriately interwoven among and between national and international mandates. Claims that there are “holes” that allow safety or security breaches are belied by the facts and current statutes and regulations. The impact of additional burdens must therefore be carefully contemplated within the currently successful safety network.

Repair stations are highly specialized and therefore highly efficient. They have helped airlines and travelers reduce costs while safety continues to improve. However, rather than embracing a reality that has been in place for decades and recognizing the benefits of the contract maintenance business model, a few organizations representing certificated mechanics and “consumers” have raised false safety and security arguments and promoted government policies that would unnecessarily disrupt international travel if implemented.

(III) AVIATION SAFETY FACTS

(A) Contract maintenance in general – and foreign repair stations in particular – does not threaten aviation safety.

FACTS: The use of repair stations over the past several decades has coincided with the safest period in the history of civil aviation. Excluding the 9-11 terrorist attacks, U.S. commercial operations resulted in [484 fatalities](#) between 1999 and 2009; in the past ten years there has been [only one](#) fatality. ARSA is proud of the work its members do to support this outstanding safety record.

(B) Airlines do not use repair stations to cut corners and avoid U.S. safety rules.

FACTS: Contract maintenance is a proven and effective way to manage maintenance scheduling and costs without negatively impacting safety. Modern aircraft are incredibly sophisticated, and it would be inconceivably expensive and inefficient to have all the technology and knowledge in-house to maintain every part of every aircraft.

Repair stations are authorized by the FAA to perform specific functions and are highly specialized, enabling a better return on investment in facilities, equipment, tools, training and technology. Repair stations help reduce maintenance costs while meeting the same high safety standards required by air carriers. Operators have become safer, more profitable and more efficient. That, in turn, has helped protect the American public and U.S. jobs. Finally, air carriers are ultimately responsible for the safety of their aircraft and have powerful incentives to seek top quality maintenance services at the best prices; “top quality” because insurers and travel organizations monitor and reward best practices that reduce losses and “best prices” because airlines operate in a high cash flow, ultra-low margin financial environment in which safety must be maintained and unnecessary costs eliminated for the operator to survive.

(C) The *countries* in which foreign repair stations are located do not need higher standards than the United States.

FACTS: Another country’s regulations and oversight are irrelevant for FAA certification and oversight purposes. Under the Chicago Convention, the state of registry of the aircraft controls the maintenance.³ Wherever work on U.S.-registered aircraft is performed, it must be done by FAA-approved persons that have met U.S. regulatory standards, who work under U.S. rules and who follow the U.S. carrier’s maintenance program.

(D) Aircraft maintenance work is not being performed by uncertificated entities that are beyond the jurisdiction of the FAA.

FACTS: Under federal law and [14 CFR § 43.3](#), U.S.-registered aircraft and related components *must* be maintained by FAA-approved “persons”; specifically, mechanics and repairmen certificated under [14 CFR part 65](#) and people working under their supervision, repair stations certificated under [14 CFR part 145](#), air carriers certificated under [14 CFR parts 121](#) or [135](#) and, in certain limited circumstances, pilots.

There is only one exception to the requirement that U.S. aircraft must be maintained by FAA-certificated persons: the bilateral aviation safety agreement between the U.S. and Canada allows Transport Canada-approved maintenance organizations to work on U.S.

³ *Id.*

aviation products and articles without additional approval and provides reciprocal privileges to U.S. repair stations to work on Canadian aircraft ([14 CFR § 43.17](#)).

(E) Work performed by repair stations – especially those outside the United States – is not inferior to the work performed by mechanics employed by airlines.

FACTS: All individuals working on U.S. registered aircraft and related articles, whether located in the United States or abroad, must meet the same standards. Under [14 CFR § 43.13](#) “the condition of the aircraft, airframe, aircraft engine, propeller, or appliance worked on will be at least equal to its original or properly altered condition...”. When working for an air carrier, all persons must follow the air carrier’s maintenance program ([14 CFR § 121.367](#)). Pursuant to [14 CFR § 121.363](#), airlines are always responsible for airworthiness and ensuring that, no matter who does it, maintenance is performed according to the airline’s maintenance program and FAA regulations. Aside from oversight by FAA and other aviation safety regulators, airlines closely scrutinize and regularly audit their contract maintenance providers to ensure compliance.

(F) Repair stations outside the United states must meet the same standards as U.S. repair stations (i.e., there is not a “second, inferior set of safety standards for aircraft maintained outside of the United States”).

FACTS: [14 CFR](#) part [145](#) subpart [B](#) describes the repair station certification requirements applicable to *both* foreign and domestic maintenance facilities. These include having a repair station manual, a quality control manual, appropriate housing and facilities, a training program, appropriate equipment, personnel and technical data. In some cases, the standards for foreign facilities are stricter. For example, pursuant to [14 CFR § 145.55\(b\)](#), foreign repair station certificates are only valid for one year, while those issued to U.S. domestic facilities are valid until cancelled, surrendered or revoked.

(G) Mechanics working at foreign repair stations have equivalent knowledge and capabilities as those certificated by the FAA.

FACTS: Many individuals working in civil aviation maintenance in the United States are not certificated by the FAA. While technicians can hold FAA certificates allowing work and supervision under their own authority, most individuals working in the aviation sector are not required to be certificated. In fact, that is the whole point of a repair station or air carrier having authority to perform maintenance – the company must ensure it employs *knowledgeable and capable* personnel, regardless whether the individual holds an FAA-issued mechanic certificate.

[14 CFR](#) part [145](#) subpart [D](#) prescribes very specific personnel requirements for all repair stations (wherever they are located), including having a sufficient number of employees with training or knowledge and experience to ensure all work is performed in accordance with [14 CFR](#) part [43](#). Repair stations are also required to have an FAA-approved training program to assess the abilities of all employees based on training, knowledge, experience or practical tests.

While the FAA does not certificate mechanics outside the United States, the agency’s regulations prescribe parallel requirements for supervisory personnel at foreign repair stations equivalent to those for U.S. certificated individuals (viz., a minimum of 18 months experience in the work being performed, training or familiarity with the methods,

techniques, practices, aids, equipment and tools used to perform the work, and the ability to read, right and understand English).

(H) All employees performing maintenance for air carriers may not be subject to drug and alcohol (D&A) testing.

FACTS: Pursuant to [14 CFR § 120.123](#), maintenance employees of U.S. air carriers must be removed from the FAA/Department of Transportation (DOT) D&A testing pool when those individuals are working outside U.S. territory. The United States recognizes the sovereignty of other nations; when an American citizen is in a foreign country, s/he must follow the laws of that nation.

[Section 308\(d\)\(2\) of the 2012 FAA Modernization and Reform Act](#) directed the FAA to “promulgate a proposed rule” to require D&A testing for foreign repair station employees performing safety-sensitive maintenance functions on U.S. air carrier aircraft *consistent with the applicable laws of the country in which the repair station is located* (emphasis added). [Section 2112 of the 2014 FAA Extension, Safety, and Security Act](#) further directs that a notice of proposed rulemaking (NPRM) be issued within 90 days of the enactment of that law and that the rulemaking be finalized within one year of the publication of the NPRM.

As directed, the FAA issued an [advanced notice of proposed rulemaking \(ANPRM\)](#) in March 2014. The agency is continuing its work to craft a final rule. Comments provided to the ANPRM addressed the challenges associated with developing testing standards when countries have different constitutional and legal privacy protections. Some aviation regulatory systems have D&A testing or prevention standards, but they differ from those in the United States.⁴ For countries that do not have mandatory standards, it would be impractical and hazardous to transport blood and urine for testing at U.S. DOT-approved labs.

While ARSA supports efforts to prevent those under the influence of alcohol and drugs from maintaining aircraft, there is no evidence of a systemic D&A abuse problem in the industry that warrants further congressional action. Additionally, given the complexity of the rulemaking, agencies must take whatever time is necessary to craft a regulation that achieves Congress’s objectives; the process should not be rushed with artificial deadlines.

(I) Foreign repair stations are required to conduct security background checks on their employees.

FACTS: There are multiple and overlapping employee background check rules that impact the aviation maintenance industry. In January 2014 the Transportation Security Administration (TSA) issued [security rules for repair stations](#) required by [Vision-100](#), the 2003 FAA reauthorization law. Title [49 CFR](#) part [1554](#) applies to [all FAA-certificated repair stations](#) (except those located on U.S. or foreign government military bases) and requires them to comply with TSA Security directives and allow unannounced TSA inspections. Repair stations located on or adjacent to an airport are required to comply with additional rules ([49 CFR § 1554.101](#)), including designating a security point of contact (POC) for TSA and verifying background information for both TSA POCs and those having access to the means used to prevent the operation of large, unattended

⁴ See, e.g., [“13 employees of airlines, airports suspended for failing alcohol test: DGCA official”](#), The Hindu, Oct. 28, 2019.

aircraft. Under [49 CFR](#) part [1554](#), subpart [C](#), the TSA may direct the FAA to suspend or revoke the certificate of a repair station that fails to correct security deficiencies or is deemed an immediate risk to security.

Background checks are also required by airport security rules. For example, in the United States, [49 CFR § 1542.113](#) requires a repair station that is the tenant of an airport to comply with the airport's security program. All individuals allowed unescorted access to a Security Identification Display Area (including an employee of a repair station at an airport) are fingerprinted and must pass a background investigation that includes a criminal history records check, employment history verification and TSA Security Threat Assessment against terrorist, immigration and law enforcement databases.

Through [Annex 17 \(Security\) to the Chicago Convention](#) the International Civil Aviation Organization (ICAO) is [aggressively promoting](#) the adoption of parallel airport security requirements on a global basis. Among other things, Annex 17 requires ICAO member states to “establish and implement a written national civil aviation security programme to safeguard civil aviation operations against acts of unlawful interference, through regulations, practices, and procedures, which take into account the safety, regularity and efficiency of flights” and “designate and specify to ICAO an appropriate authority within its administration to be responsible for the development, implementation and maintenance of the national civil aviation security programme.”

Regardless of the regulatory requirements, maintenance facilities around the globe have a strong incentive to maintain a high level of security. Aircraft are very expensive machines protected by both sophisticated insurers who take steps to reduce their exposure to risks of loss and by batteries of lawyers ready to recover any losses that might occur. A repair station that is less than diligent about the security of aircraft in its facility faces existential threats from aircraft insurers and lawyers and has a strong incentive to maintain exemplary security, potentially greater than U.S. law or regulation can reasonably provide. Although the risk to aviation security from a bad actor at a repair station is low given the multiple levels of scrutiny and redundancy, protecting customer property from theft and damage is a high priority. As with ensuring that work is done to the highest safety standards, maintaining security is simply good business practice.

(J) Foreign repair stations are subject to FAA inspections.

FACTS: All FAA-certificated repair stations are required by [14 CFR § 145.223](#) to allow the agency to inspect “at any time to determine compliance” with FAA regulations.

The ability of the FAA to visit domestic repair stations is constrained by agency staffing, budgets, proximity to the inspector's office, the availability of key personnel at the oversight location and the degree direct oversight is needed based on the certificate holder's ability to negatively impact the safety system. ARSA has consistently urged Congress to provide the resources necessary for the FAA to oversee the industry.

Travel by U.S. government employees to foreign countries for official business is controlled by the Department of State and national sovereignty considerations. The FAA's Flight Standards Service International Travel Policy ([Order 8900.1, Vol. 12, Ch. 5, Sec. 1](#)) requires FAA inspectors to obtain a documented country clearance from the U.S. embassy or consulate of each destination country prior to traveling. A visa may be required from the destination country and the FAA policy notes that, “[e]ach foreign

country is a sovereign state and sets its own customs, immigration laws, and procedures that may, depending on the country, vary from those set out by the U.S. [Customs and Border Protection].”

The foregoing factors make spur of the moment visits difficult. But the concept of “surprise inspections” is a red herring. International repair stations are closely scrutinized by their own national aviation authority, the FAA and customers. The key to safety in the aviation maintenance industry is strict and systematic adherence to regulations and procedures. Inspectors and auditors closely review the repair station’s paper trail to establish compliance. If a company is not following proper procedures, it will be readily apparent to auditors and inspectors trained to spot discrepancies. Not only would a company that falsifies records be discovered, that company would quickly lose its FAA certificate and its customers. This simple fact creates a strong economic incentive to abide by the rules.

(K) Contract maintenance is not sending U.S. maintenance jobs overseas.

FACTS: Of the four types of aviation maintenance – airframe, engine, component and line – airframe (aka, heavy) maintenance is the most labor intensive. As a result, some airframe work has migrated to FAA-certificated facilities in countries where labor rates are cheaper. That said, the U.S. also has a robust and growing heavy airframe maintenance sector. Additionally, given America’s technical edge, more sophisticated engine and component work is sent to the United States from foreign countries.

This international trade has helped fuel the growth of America’s \$50 billion aviation maintenance industry. In fact, of the more than 4,000 FAA-certificated repair stations in the United States, [more than 1,500](#) are also approved by the European Aviation Safety Agency to perform work on aviation products and articles under the EU’s jurisdiction. Many U.S. repair stations are approved by other international aviation authorities. Those U.S. companies are “foreign repair stations” as far as other countries’ aviation safety regulators are concerned and could potentially be subject to retaliation if the United States restricts the ability of U.S. air carriers to use foreign FAA-certificated facilities.

(L) The increased use of contract maintenance has not cost U.S. jobs.

FACTS: U.S. aviation maintenance jobs have not gone overseas; they have gone across the street or around the corner to other U.S. companies. U.S. repair stations (the majority of which are small and medium size businesses) employ more than [188,000 Americans in all 50 states](#) (six times more than the current number of mechanics at airlines). According to the [Bureau of Labor Statistics](#), the median annual wage for aircraft mechanics and services technicians was \$62,920 in May 2018, 40 percent greater than the total median wage for all occupations in the country. Further, the U.S. aviation maintenance industry is experiencing a well-documented technician shortage, [a fact widely acknowledged](#) by airlines, manufacturers, repair stations and labor organizations representing mechanics. Thousands of well-paying U.S. maintenance jobs are going unfilled.

International customers have been an important driver of economic growth for the U.S. maintenance industry. More than one-third of U.S. repair stations hold at least one approval from a foreign regulator. Were Congress to act against foreign repair stations that resulted in retaliation against U.S. facilities, the economic impact would be

devastating and jobs at a third of U.S. facilities would be impacted. Given that they have the highest number of foreign repair stations, the ten states most affected would be:

- Florida (at least 309 facilities hold foreign approval)
- California (196)
- Texas (142)
- Arizona (67)
- Kansas (56)
- Connecticut (55)
- Oklahoma (49)
- Washington (49)
- New York (47)
- Ohio (44)

(M) Foreign repair stations serve many purposes and are not used merely to give U.S. carriers access to cheap maintenance services.

FACTS: Foreign repair stations have helped make the United States a global aviation leader. Because U.S.-registered aircraft must be maintained by FAA-approved persons (see D above), the network of FAA-certificated international repair stations allows U.S. carriers to operate globally (if there were no foreign repair stations, there would be no one authorized to fix U.S. aircraft at a foreign destination). Additionally, many FAA-certificated facilities on foreign soil are owned by leading U.S. companies that wish to provide product support to a global customer base. Given that most of the growth in the aviation sector over the next decade will take place outside the United States, it is important that U.S. companies be able to capitalize on these opportunities.

(N) The suggestion that “offshoring” of aviation maintenance work has cost the U.S. economy 8,200 jobs is unsupportable.

FACTS: This statistic was generated by the [Transport Workers Union](#). It is a projection of the number of U.S. jobs that would be supported by the volume of aviation maintenance work currently being performed overseas on U.S. registered aircraft. It does not reflect actual “lost jobs” or unemployed people. Indeed, the maintenance industry collectively employs more than 200,000 Americans and is facing a labor shortage. ARSA estimates that as of Spring 2019, there were more than 4,000 unfilled positions in the U.S. aviation maintenance industry and that U.S. companies were foregoing \$100 million per month in lost business activity due to the technician shortage. In other words, demand for U.S. aviation industry labor far outstrips supply, [a fact publicly and consistently acknowledged by mechanics unions](#). It is not a question of doing the work in the United States or abroad; there simply are not enough people in the United States to do the work.

(IV) ADDITIONAL RESOURCES

- (A) The FAA’s repair station database (searchable by city, state and country) is at <https://av-info.faa.gov/RepairStation.asp>
- (B) ARSA’s state-by-state economic data (employment and annual economic impact) is at: <http://arsa.org/wp-content/uploads/2019/03/ARSA-MarketReport-StatebyState-2019.pdf>
- (C) ARSA’s most recent press release explaining the benefits of international trade in aviation maintenance services to the U.S. economy is here: <http://arsa.org/easa-us-certificates/>