



# A Report From the TWU

## The Impact of Offshoring Aircraft Maintenance to Foreign Repair Stations



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# The Impact of Offshoring U.S. Aircraft Maintenance to Foreign Repair Stations: Eliminates Thousands of Middle-Class American Jobs and Undermines Critical Safety and Security Oversight

A Report by The Transport Workers Union of America, AFL-CIO (TWU)

U.S. airlines are currently enjoying the most profitable period in commercial aviation history. The airlines are earning billions of dollars in profit, flying more than 700 million passengers a year on thousands of aircraft traveling across the globe. As passenger air travel has grown, airlines have ordered thousands of new aircraft to meet this demand. Yet, the American workers employed by the airlines to repair this aircraft have watched their jobs become outsourced to contract repair facilities, including jobs offshored to facilities located in other countries. Offshoring this work eliminates thousands of strong middle-class jobs and poses safety and security risks. At a time of record profitability and growing demand, it is time to bring these maintenance jobs back to America.

This report is intended to explore the current state of U.S. airline maintenance offshoring, the threat to safety and security, and its impact on U.S. jobs.

The analysis was performed by drawing from reports issued by the U.S. Department of Transportation, Congressional Research Service, and Government Accountability Office, as well as aviation data, industry reports, and airline press. These resources document the key findings highlighted in this report, including:

- Approximately 24% of total heavy aircraft maintenance is offshored to repair facilities in other countries, more than triple the share offshored in 2003
- U.S. airlines spend \$2 billion annually on maintenance performed overseas
- Thousands of U.S. aircraft maintenance jobs have been lost due to offshoring practices
- There are long-standing concerns regarding the level of U.S. oversight of offshored maintenance work
- Safety and security regulatory gaps persist, creating a double standard for domestic maintenance workers and workers overseas
- The U.S. is transferring its oversight of offshored maintenance work to foreign aviation authorities

Today, mainline U.S. commercial passenger airlines operate a fleet of nearly 4,000 large jet aircraft. To ensure public safety, this aircraft must be maintained according to the regulations issued by the Federal Aviation Administration (FAA). Traditionally, the vast majority of this maintenance work was performed ‘inhouse,’ or by the airlines’ direct employees working at facilities owned, operated, and overseen by the airlines. However, decades ago, the airlines began outsourcing their inhouse maintenance, shifting this work from their own facilities to external contract maintenance shops known as repair stations.

Over the last few decades, this trend of outsourcing maintenance has grown dramatically. According to U.S. Department of Transportation data, in 1990, airlines outsourced maintenance work accounting for 20% of their maintenance costs.<sup>1</sup> By 2016, outsourced maintenance work increased to 47% of U.S. airlines’ total maintenance spending, representing a staggering \$7.3 billion in expenditures.<sup>2</sup> The current rate of outsourcing is more than double the share in the early 1990’s, and 50% more than the share in the year 2000.

**Chart 1**

### The Share of US Airlines Maintenance Outsourcing Has Nearly Doubled in Past 20 Years



Source: US DOT Form 41 Data  
 Note: Based on outsourced share of total maintenance spending.

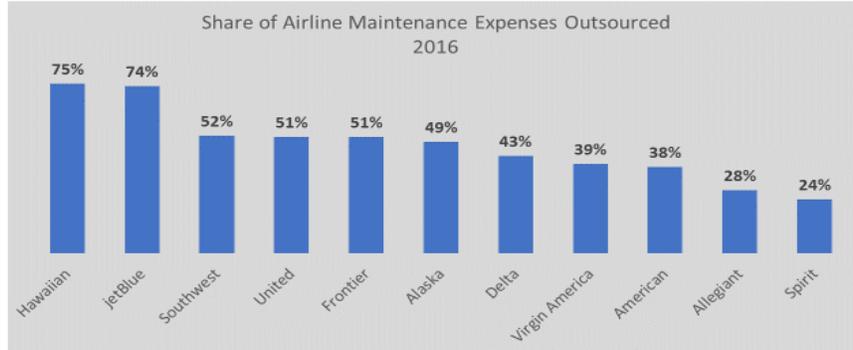
While the industry average for spending on outsourced maintenance work is currently 47%, individual airlines vary drastically, with some spending as much as 75% of their total maintenance costs on outsourced maintenance.

<sup>1</sup> U.S. Department of Transportation Form 41 data

<sup>2</sup> *Ibid.*

## Chart 2

### US Airlines Outsourced Up to 75% of Aircraft Maintenance in 2016



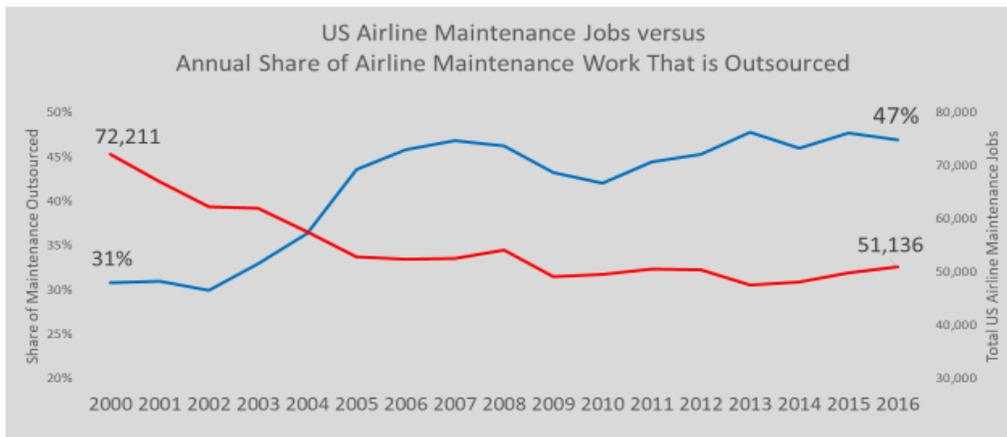
Source: US DOT Form 41 Data.

Note: Based on outsourced share of total maintenance spending.

This outsourcing has had a major impact on the U.S. aircraft maintenance workforce. The chart below shows the direct relationship between increased maintenance outsourcing and the loss of inhouse U.S. airline mechanic jobs. In 2000, U.S. airlines employed more than 72,000 inhouse mechanics to maintain their aircraft fleets while 31% of total airline maintenance costs was spent on outsourced maintenance. As the rate of contract maintenance increased to nearly 50%, the number of mechanic jobs at U.S. airlines dropped to 51,000 – a 30% reduction of the workforce.

## Chart 3

### Outsourcing Has Resulted in Loss of Over 20,000 Maintenance Jobs at US Airlines



Source: US DOT Form 41 Data

Note: Outsourced work based on the share of total maintenance spending that is outsourced.

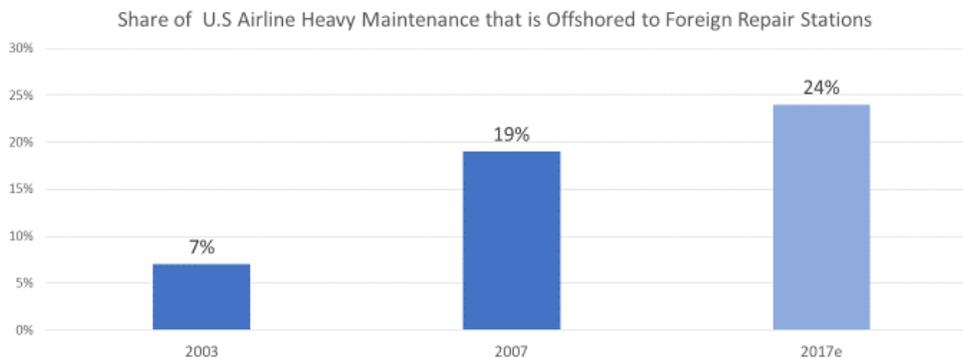
Airlines are outsourcing maintenance of U.S. aircraft not only to repair stations located in the U.S., but also to repair facilities located in other countries. A change made to FAA regulations in the 1980s allowed airlines to send U.S. aircraft to foreign facilities for maintenance even when the aircraft or components in question operated exclusively in the U.S. Since then, airlines have increasingly offshored the maintenance work traditionally done by U.S. workers.

No government agency or industry association routinely collects data on maintenance offshored to foreign repair stations. However, in 2009, the U.S. Department of Transportation Office of Inspector General (DOT OIG) reported, after having studied nine major airlines, that those airlines outsourced an average of 71% of their heavy airframe maintenance.<sup>3</sup> Of the 71%, 27% of the work was offshored to foreign repair stations in 2007 – an increase from 21% in 2003.<sup>4</sup>

The Congressional Research Service issued a report in 2012 stating that the findings of the OIG’s 2009 study imply that the U.S. airline industry, as a whole, increased its offshored heavy maintenance from 7% in 2003 to 19% in 2007.<sup>5</sup> This represents a near tripling in the share of U.S. airline heavy maintenance that was offshored to foreign repair stations in a 4-year period (2003-2007).

**Chart 4**

### Offshoring of Aircraft Heavy Maintenance to Foreign Repair Stations Nearly Tripled In Four Years



Source: Federal Aviation Administration (FAA), “Air Carriers’ Outsourcing of Aircraft Maintenance,” Report Number: AV- 2008-090, September 30, 2008  
Note: 2017 share is estimated based in part on growth in foreign repair stations and employment growth at these stations from FAA data

<sup>3</sup> This heavy maintenance is pre-scheduled, labor-intensive (taking as long as 70,000 man-hours), and includes a full teardown and reassembly of the aircraft.

<sup>4</sup> Office of Inspector General, Department of Transportation, *Actions Needed to Improve Safety Oversight and Security at Aircraft Repair Stations*, CC-2010-005 (November 18, 2009).

<sup>5</sup> Congressional Research Service, *Offshoring of Airline Maintenance: Implications of Domestic Jobs and Aviation Safety*, CRS Report to Congress, R. Tang and B. Elias, December 21, 2012.

Chart 4 above highlights the near three-fold growth in offshoring that occurred between 2003 and 2007. Unfortunately, federal estimates of offshoring maintenance to foreign stations have not been updated in recent years. However, it is reasonable to project that the share of offshored heavy maintenance has grown dramatically - to an estimated 24%, as reflected in Chart 4. This estimate is based on the following considerations: the number of foreign repair stations has increased by 2.6% between 2007-2015, and employment at foreign stations to which U.S. aircraft maintenance is offshored (as identified in a 2012 Congressional Research Service report) grew by 21% between 2012-2017.<sup>6</sup>

Given this significant rate of offshoring, we estimate U.S. airlines currently spend approximately \$2 billion annually on offshored maintenance. That is billions of dollars that could have been invested in the U.S. by employing certificated and skilled American workers to do the work. Instead, U.S. airlines have offshored this work to facilities located in South America, China, and Europe, offshoring more than 8,200 quality, middle-class American jobs.

Despite this loss of thousands of jobs, the practice is likely to continue. For example, a recent study of regional maintenance spending trends conducted for the Aeronautical Repair Station Association found that maintenance spending will continue to shrink in North America by 2022, despite growth in total U.S. airline aircraft fleet size. In contrast, maintenance work is expected to grow in the locations where the bulk of outsourced U.S. maintenance is performed. For example, projected growth at Latin American repair stations is forecast to grow by 5.1% annually over the next 10 years, while the fleet size in Latin American countries is expected to grow by only 2.6% per year during the same period.<sup>7</sup> A significant portion of this growth in aircraft maintenance in Latin America, as well as in China and elsewhere, is the result of offshored maintenance of U.S. aircraft.

The practice of contracting maintenance work grew dramatically following the terrorist attacks of September 11, 2001. Seeking to recover from the steep drop in air travel demand, airlines reduced worker wages and benefits, and sought cheaper maintenance alternatives. Airlines' interest in driving down costs is a primary factor in the decision to eliminate U.S. jobs and offshore

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<sup>6</sup> FAA online foreign repair data and Congressional Research Service, *Offshoring of Airline Maintenance: Implications of Domestic Jobs and Aviation Safety*, CRS Report to Congress, R. Tang and B. Elias, Dec.. 21, 2012.

<sup>7</sup> Oliver Wyman, *2017 Global Fleet and MRO Forecast*, at 35.

work to countries where labor costs are considerably lower than in the U.S. market. For example, one report indicates that airlines hire foreign mechanics for one-third of the cost of U.S. inhouse mechanics.<sup>8</sup> Another report found that workers employed at a repair station in El Salvador earned a starting pay of just \$2.00 an hour.<sup>9</sup>

Offshoring U.S. aircraft maintenance not only harms American workers, but the practice also poses serious safety and security concerns. Dating back to 2003, and as discussed in subsequent reports, the DOT OIG has found a profound lack of proper oversight of the maintenance performed at foreign facilities and the difficulty in ensuring that foreign stations are maintaining U.S. aircraft in accordance with FAA standards.<sup>10</sup> For example, in 2013 the DOT OIG reported on the systemic deficiencies found at foreign facilities, including insufficient mechanic training and improper use of repair tools.<sup>11</sup>

Following enactment of a 2011 multi-national agreement, the FAA has begun to cede oversight of aircraft maintenance to foreign aviation authorities in the 18 nations of the European Union.<sup>12</sup> Under that agreement, foreign aviation authorities have replaced the FAA in processing new repair station applications and inspecting EU-based facilities that maintain U.S. aircraft. The DOT OIG report on the transfer of FAA oversight expressed deep concern that foreign aviation authorities were not being properly trained to replace the FAA oversight of these foreign repair facilities.<sup>13</sup> The OIG report concluded,

*“Prior to transferring its oversight, FAA required each foreign authority to complete a self-assessment that contained important questions related to inspector training, workforce, and resource issues. However, FAA did not ensure that all questions in these assessments were answered or well substantiated to support its conclusion that the foreign authorities possessed comparable capabilities to FAA.*

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<sup>8</sup> *To Cut Costs, Airlines Send Repairs Abroad*, Daniel Zwerdling, National Public Radio, October 19, 2009.

<sup>9</sup> Congressional Research Service, *Offshoring of Airline Maintenance: Implications of Domestic Jobs and Aviation Safety*, CRS Report to Congress, R. Tang and B. Elias, December 21, 2012 at 11.

<sup>10</sup> Department of Transportation and Office of Inspector General, *Review of Air Carrier’s Use of Aircraft Repair Stations*, Report Number AV-2003-047, Washington, DC, July 8, 2003, and a series of reports, audits, and congressional testimony provided in subsequent years.

<sup>11</sup> Office of Inspector General, Department of Transportation, *FAA Continues to Face Challenges In Implementing a Risk-Based Approach for Repair Station Oversight*, Report Number AV-2013-073, May 1, 2013 at 12.

<sup>12</sup> This agreement, *The Agreement between the United States of America and the European Community on Cooperation in the Regulation of Civil Aviation Safety*, was enacted in 2011. The U.S. has similar agreements with Singapore and Switzerland.

<sup>13</sup> Department of Transportation Office of Inspector General, *FAA Has Not Effectively Implemented Repair Station Oversight in the European Union*, Report No. AV-2015-066, July 16, 2015, at 2.

*As a result, FAA cannot be assured that foreign authority inspectors are ready to take on this oversight responsibility or that the repair stations are continuing to comply with regulations”*

The withdrawal of FAA oversight in Europe has been dramatic. The transfer of oversight under the agreement allowed the FAA to close its only two European field offices in London and Frankfurt. Those offices employed 23 FAA inspectors who oversaw the maintenance work performed at 458 repair stations in Europe. The number of repair stations servicing U.S. aircraft in Europe has since increased to 474.

**Chart 5**

Direct FAA Oversight Has Been Eliminated as the Number of FAA Certificated European Repair Stations Has Increased



Source: Office of the Inspector General, *FAA Has Not Effectively Implemented Repair Station Oversight in the European Union*, Report Number AV-2015-066, July 16, 2015.

Adding to the concern of insufficient oversight are the significant gaps in existing regulations which govern domestic maintenance workers and those employed at foreign stations. For instance, unlike domestic facilities, foreign repair stations servicing U.S. aircraft are not required to have a single FAA-certificated mechanic working at the shop. Certification requires firsthand experience, completion of training, and passage of exams to demonstrate knowledge and skill proficiency. Certification of employees helps ensure repairs will be performed correctly and safely and holds accountable those who improperly repair aircraft.

As shown in Table 1, current FAA data reveals that the ratio of noncertificated mechanics to certificated mechanics at a variety of large foreign repair stations show a staggering ratio of

22.85-to-1.0.<sup>14</sup> The ratio of noncertificated and certificated inhouse maintenance workers employed by American Airlines, Delta, and United is just 0.13-to-1.0. This translates to 175 times greater ratio of certificated to noncertificated mechanics at inhouse U.S. airline facilities than at foreign repair stations.

**Table 1**  
**Large Foreign Repair Stations**  
**Ratio of Non-Certificated to Certificated Mechanics**

Facility	Country	Total			Non-Cert to
		Maintenance Employees	Non-Certificated Mechanics	Certificated Mechanics	Cert Ratio
Aeroman	El Salvador	2,400	2,231	163	13.69
TACA	El Salvador	479	138	68	2.03
AMECO	China	7,234	5,276	104	50.73
Boeing Shanghai	China	566	314	30	10.47
ST Aero Services	Singapore	1,801	418	34	12.29
HAECO	Hong Kong	5,842	3,800	124	30.65
Aerovias de MEX	Mexico	899	592	45	13.16
Mexicana MRO	Mexico	1,019	486	12	40.50
Total Foreign		20,240	13,255	580	22.85
Total US Airlines *		20,741	1,732	13,104	0.13

Source: FAA as of 11/17. \* AA, DL, and UA

Without a requirement that foreign workers be certificated, the current regulations allow lower skilled workers -- earning drastically lower wages -- to repair U.S. aircraft.

Other significant gaps between domestic and foreign repair stations exist as well: per FAA regulations, workers at domestic repair stations must undergo DOT drug and alcohol testing. Violations of these testing standards ultimately can prevent a U.S. worker from holding a position as an aircraft maintenance employee. However, workers at foreign repair stations performing the same type of aircraft maintenance are not subject to the same drug and alcohol testing mandate.

Additionally, while mechanics at domestic repair stations are subject to Transportation Security Administration (TSA) threat assessments, no such requirement applies to foreign maintenance workers. This glaring discrepancy provides individuals, who may pose security risks, virtually unchecked and limitless access to U.S. aircraft.

Lastly, FAA inspectors perform periodic, unannounced, on-site inspections of domestic repair facilities to ensure operations comply with safety standards. This element of surprise helps

<sup>14</sup> FAA, International Program Division database, November 2017

ensure that facilities maintain compliance with regulations at all times - not only when an inspection is imminent. However, the FAA notifies foreign facilities of upcoming inspections, providing them time to take necessary actions to regain compliance before the inspector arrives.

As discussed in this report, for more than a decade, government agencies have reported on the growing trend of outsourcing U.S. aircraft maintenance to domestic and foreign repair stations. Those reports have raised concerns about the weak oversight of offshored work and the lower regulatory standards to which foreign facilities and their employees are held. In addition to posing safety and security concerns, offshoring U.S. aircraft maintenance also has eliminated thousands of good-paying American jobs. In search of cheap maintenance labor, U.S. airlines have sent repair work overseas while their own skilled mechanics in the U.S. have watched their jobs disappear.

This practice must end. Over the last several years, Congress has directed the FAA to begin closing the standards gap by issuing regulations that require foreign workers to undergo drug and alcohol testing and background investigations. The FAA must complete these outstanding mandates and take additional steps to eliminate the differences in regulations governing foreign and domestic maintenance facilities. The FAA also should ensure that its own inspectors have the authority and access needed to oversee foreign maintenance. Policymakers also must adopt measures that encourage airlines to place aircraft maintenance back in the hands of certificated U.S. airline mechanics, where the work is strictly regulated and closely monitored by the FAA. Meeting these needs will improve confidence that U.S. aircraft is repaired properly and will return thousands of middle-class jobs to the U.S.

We urge policymakers to act.

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