



MISSISSIPPI DEFENSE DIVERSIFICATION INITIATIVE



Defense Diversification Opportunities with the Airbus Supply Chain

**PROMOTING INNOVATION,
DIVERSIFICATION AND COOPERATION IN
THE MISSISSIPPI DEFENSE COMMUNITY**



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Airbus Supply Chain
May 2018**

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This report was prepared under contract with the National Security Technology Acceleration Support and Economic Diversification Efforts for the State of Mississippi, with financial support from the Office of Economic Adjustment, Department of Defense. The content reflects the views of the National Security Technology Acceleration Support and Economic Diversification Efforts for the State of Mississippi and does not necessarily reflect the views of the Office of Economic Adjustment.

Acknowledgements

The author wants to express appreciation to the following individuals who contributed to the Mississippi Aerospace Defense Contractors Diversification Opportunities in the Airbus Supply Chain study.

The University of Southern Mississippi Trent Lott Center

Dr. Shannon Campbell, Director

Dr. Chad Miller, Associate Professor

Andy Kilgore, Mississippi Defense Diversification Initiative Director

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Industry Contributors

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Shelby Glover, Senior Project Manager of the Mobile Area Chamber of Commerce

Executive Summary

The Airbus Aerospace Company is one of the largest firms in the world in the aviation market. In 2015, the European aerospace company opened one of four global assembly and delivery sites for the A320 family of commercial aircraft in Mobile, Alabama. This would appear to open opportunities for US-based aerospace suppliers and defense diversification opportunities. However, even though 80% of Airbus's parts are outsourced, which includes over 670 suppliers in the US, the Airbus supply chain is based on modular components built in factories in Europe with the segments sent to the US for final assembly. Until the Airbus opens logistics centers in the US, most parts will need to be shipped to Europe and back to the US in a component part eliminating a geographical advantage.

There are opportunities for certain sectors of the aerospace industry to be near Mobile for the final assembly and painting process. Mississippi can capitalize on communities with proximity to the Mobile final assembly plant by having suppliers in the maintenance repair and overhaul (MRO) and in the aircraft painting industries. The MRO military industry is a competitive industry that functions better with civilian market diversification opportunities. There could be a potential to locate a MRO facility in the Mississippi Gulf Coast region. This could be supported through collaboration with the St. Louis Regional Advanced Manufacturing Partnership.

Introduction

This report uses primary and secondary data to identify defense diversification opportunities from the Airbus A320 assembly facility in Mobile, Alabama. Airbus' operations profile of the commercial airline segment is reviewed; a demonstration of the process for becoming an Airbus supplier and overview of the commercial airline segment is shown; and opportunities for the Gulf Coast region of Mississippi are identified.

The Department of Defense Office of Economic Adjustment (OEA) Mississippi Defense Diversification Initiative (MDDI) commissioned this report. This pilot program exists to strengthen and diversify the defense industry through the building of collaborative partnerships between defense contractors, educational institutions, and local and state government. Promoting commercialization and technology transfer of defense technology is an important component of the initiative.

Overview

Airbus is a company that consists of commercial aircraft, space and helicopter manufacturing divisions. By December 2017, Airbus produced 10,926 aircraft and 12,000 helicopters worldwide and is the second largest space company in the world. Airbus Aerospace Company spent a reported \$3.7 billion on research and development in 2016 and has produced over 37,000 patents worldwide (About Airbus, n.d.). The company recorded revenues of \$82.3 billion in 2017 ("Full-Year 2017 results," n.d.). Airbus offers a variety of commercial and passenger airline models such as the single-aisle A320 to the double-decker A380 models that can seat from 100 to 500 passengers. The largest competitor for Airbus is Boeing, with both companies dominating the commercial aviation market share (Bryant, 2016).

Becoming a Supplier

Airbus outsources 80 percent of the company's flying and non-flying competent parts to over 12,000 suppliers worldwide. This list includes over 670 United States suppliers. The value of the supplier system is projected to be \$60.6 billion, and Airbus desires to increase global sourcing by 2020 to 40 percent sourcing from outside of Western Europe ("Be an Airbus supplier," n.d.). Desired increases in global sourcing provide an opportunity for United States suppliers to exploit Airbus' desire to increase outsourcing in foreign countries.

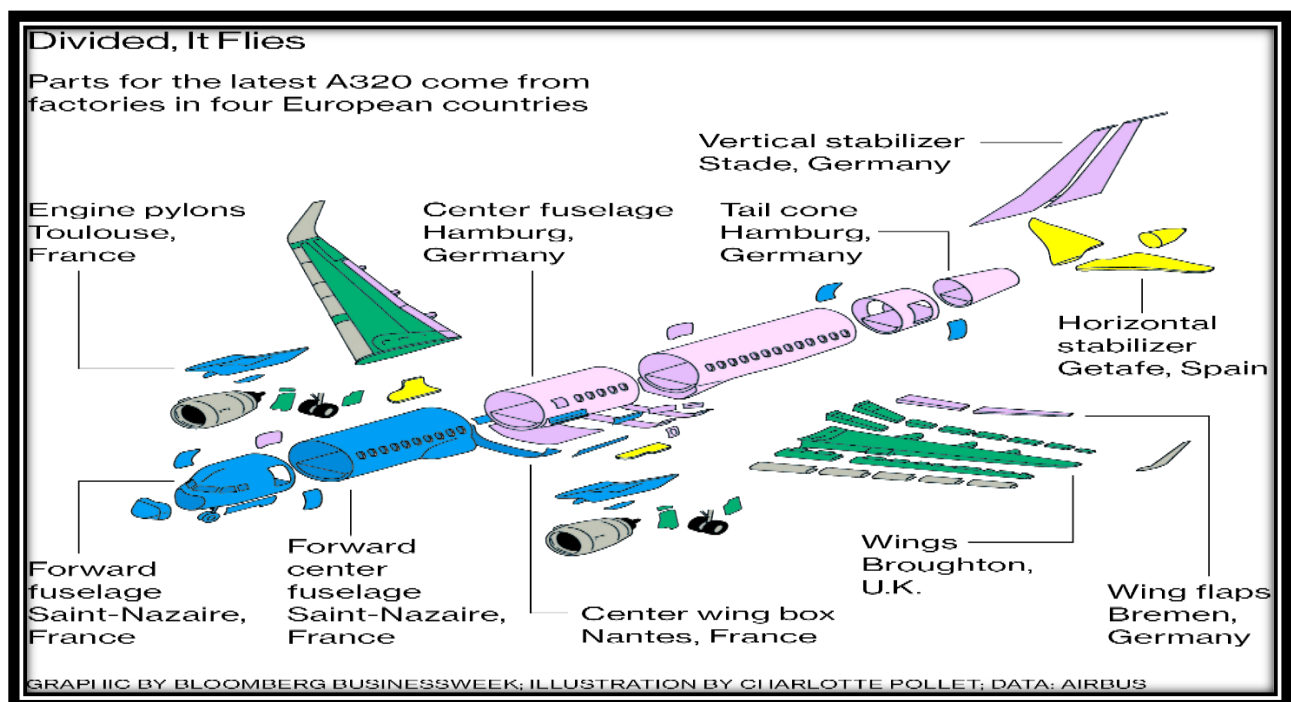
The process of becoming an Airbus supplier starts with setting up an online account and listing supplier's details of their company information. If a potential supplier meets the prerequisites to become an Airbus supplier, a buyer will contact the supplier. A call-to-tender contract is then drafted between Airbus and the potential supplier, and the potential supplier can give their bid to the Airbus procurement specialist. Requirements are that all suppliers have proper certifications to produce airplane products in the country of origin and comply with all exporting laws. Suppliers will be responsible for inspecting the products to ensure that they meet Airbus' standards, as well as issuing warranties for the products. If the supplier is chosen for the winning bid, the buyers must send written confirmation to Airbus Americas to finalize the agreement. Products must be delivered to the specification of the purchase order and in the correct ordered quantity. Airbus has the right to refuse the purchase order. If the product is rejected, it will be shipped back to the supplier at the supplier's expense. The product is expected to be modified and shipped back to Airbus within 14 days.

How the Supply Chain Functions

Tom Enders, the Chief Executive Officer for Airbus, described the reasoning for Airbus' supply chain as, "Airbus will set up production capacity where it sees the potential for orders" (Matlack, Katz, & Nussbaum, 2018). The advantages of having production in the United States provides protection for rate fluctuation and the marketing benefit of being a local manufacturer (Siviere, 2015). The Airbus final assembly plant in Mobile is expected to produce over 4,700 new A320 by 2035. United States firms that purchase many of these planes are Delta and United Airlines (Siviere, 2015).

Enders believes that it is first and foremost to the global competitiveness of the company and that their industry is used for global suppliers (Matlack, Katz, & Nussbaum, 2018). Airbus has 14 factories located in France, Germany, Spain, and the United Kingdom that manufacture segmentations of the plans for Airbus (see Figure 1).

Figure 1: A320 Segmentation Chart



Source: Bloomberg

The manufacturing facilities receive component parts from suppliers around the world, which are then assembled into the segmentation at the manufacturing facilities. There are no manufacturing suppliers for Airbus in the United States (see Figure 2), because these suppliers only make component parts (Glover, 2018). For example, Kansas based supplier Spirit AeroSystems Holdings Inc. produces the central fuselage of the A350 which is sent to Hamburg Germany for assembly in the fuselage segmentation of the plan (Matlack, Katz, & Nussbaum, 2018). The segmentations are sent to Toulouse, France or Hamburg, Germany for the assembly of the segmentation unit of the plane. Lastly, the planes will be sent to a final assembly plant like Mobile, Alabama to have everything assembled together, painted and ready for flight (Siviere, 2015).

Figure 2: Airbus Component Parts Suppliers in the United States



Source: Airbus Approved Supplier List, 2017

Implications for Mississippi

A contributing industry liaison from the Mobile, Alabama Chamber of Commerce explained that the Airbus final assembly plant has six suppliers located at the airport complex. She said potential suppliers for this facility would be firms in the Maintenance Repair and Overhaul (MRO) and airline coating industries. This would mostly fall under NAICS Code 488190 Other Support Activities for Air Transportation. Alabama, Mississippi and Florida have an opportunity to capitalize on the proximity to the facility because of interstate access. However, there currently does not appear to be a reason to strategically place a supplier next to the Mobile facility, other than MRO and aircraft painting services. The state of Mississippi has two suppliers for Airbus: Air Cruisers Company in Liberty and Eaton Aerospace in Jackson. If Mississippi is going to increase its chances of being a larger supplier to Airbus, then the state will have to recruit aerospace supplier firms to locate to Mississippi.

Target Regions for MRO Recruitment

Based on Economic Modeling Specialists International (EMSI) software Business Recruitment analysis for Other Support Activities for Air Transportation (NAICS 488190), Albuquerque, New Mexico; Chicago, Naperville and Elgin, Illinois; Las Vegas, Henderson, Paradise and Reno, Nevada; Oklahoma City, Oklahoma; Sebastian, Vero Beach, Florida; and St. Louis, Missouri would be top areas for identifying MROs that have potential to open operations on the Mississippi Gulf Coast (see Figure 3). This is due to the high payroll business locations and high cost of labor compared to compared to the Gulf Coast. For example, average earnings in Albuquerque, New Mexico are \$97,744 compared to \$74,541 on the Gulf Coast. Specific MROs should be identified in these locations and made aware of the opportunities with Airbus.

Figure 3: Target Locations for MRO Recruitment



Source: EMSI

Case for Regional Collaboration

Because of decades of military contracting in aerospace, St. Louis, Missouri has a workforce of 17,000 aerospace manufacturing jobs in its region. Many defense communities struggle with fluctuation periods between Department of Defense (DoD) contracting periods and directional changes between Presidential Administrations. St. Louis struggled with the cancellation of the F-4 Phantom in 1979 because of a military plane reduction after the cold war, and most recently the decline in F15 and F18 production as the military transitions to the F35. St. Louis used diversification efforts of export assistance, job training, and business incubation strategic to the region to alleviate the economic downturn. As the community enters a time of uncertainty with the military transition to the F35 from the F15 and F18, the economic development partnership has created a strategy to fortify the aerospace sector in St. Louis. This strategy includes: a regional asset map of defense contractors and subcontracts; a SWOT and Gap analysis; an economic adjustment plan for aerospace; strategic market positions study for the workforce and advanced manufacturing; how to build an entrepreneurial ecosystem for aerospace; and bringing together all economic development organizations in the region to develop a comprehensive growth strategy. The St. Louis Economic Development Partnership selected the Mississippi Gulf Coast as a potential partnering region for aerospace development. Their aspiration would be to

create a joint venture or to directly sell parts to aerospace suppliers in the Mobile Metro Statistical Area (MSA), Mississippi Gulf Coast, and St. Louis. The main objective would be to sell to Airbus in Mobile; however, they are interested in supplying to other aerospace industries in Mississippi. These suppliers would encompass testing simulations, avionics, MRO and plane coating for current direct suppliers. St. Louis is also interested in potentially supplying manufacturing segments to Airbus if Airbus decided to allow for segment manufacturing to happen in the United States. Aerospace consultant Hans Weber predicts Airbus will have to shift some of its design, development and systems operations in the United States (Matlack, Katz, Nussbaum, 2018). Speculation from other industry professionals are forecasting that Airbus will likely move more operations to the United States, however, there is currently no possibility for manufacturing operations to happen until Airbus agrees to an organizational change.

Mississippi and St. Louis have the current ability to collaborate to supply Airbus with MRO and painting coating of planes. Because of access to interstate 10, Florida and Mississippi suppliers supply Airbus. This would make Jackson County, Mississippi a top place for St. Louis firms or joint ventures to operate. Jackson County has a workforce with transferable skills for potential suppliers because the current workforce is trained in defense industry from Mississippi Gulf Coast Community College technical programs and Mississippi State Universities aerospace program. Jackson County also has available buildings for a St. Louis supplier to locate in the area or set up a joint venture. Lastly, Mississippi Development Authority (MDA) can financially assist with relocation, equipment and workforce training costs (see Figures 4 and 5).

Figure 4: Aerospace Incentives for Firms interested in expanding or locating in MS

PROGRAM	BENEFIT	ELIGIBILITY REQUIREMENTS*
Mississippi Aerospace Initiative Incentives Program	The Mississippi Aerospace Initiative Incentives program provides aerospace businesses with 10-year state income and franchise tax exemptions and a sales and use tax exemption for the start-up of a facility or completion of an expansion.	The incentive is available to companies that manufacture or assemble components for the aerospace industry or provide research, development or training services for the sector. Companies must invest at least \$30 million and create at least 100 full-time jobs to qualify for these incentives.
Jobs Tax Credit	<p>In Mississippi, companies receive a corporate income tax credit for creating jobs. These credits are equal to a percentage of payroll for each newly created job. Companies can either use these credits, which range from 2.5% to 10% of payroll depending on the business location, or they can opt for a job training grant as a direct reduction of workforce training costs.</p> <p>Credits are available for a five-year period and are taken in years two through six after jobs are created. Job training grants can cover up to 75% of the cost of training employees and range from \$1,000 to \$2,000 per worker, depending on the business location.</p>	A business must create and maintain between 10 and 20 jobs, depending on the location of the company's operations. Eligible businesses include: manufacturers, processors, wholesalers, distributors, warehouses, research and development facilities and technology intensive industries.
Research and Development Skills Tax Credit	An income tax credit of up to \$1,000 per year for a five-year period is available for any full-time position requiring research or development skills.	Any business with positions requiring research or development skills may apply.
Existing Manufacturer Tax Credit	An income tax credit equal to 5% of an existing Mississippi manufacturing business's additional investment in buildings and/or equipment is available.	Existing manufacturers that have operated in Mississippi for at least two years and invest an additional \$1 million or more in buildings and/or equipment may apply.
Rural Economic Development (RED) Tax Credit	An income tax credit used in conjunction with Mississippi Business Finance Corporation-issued industrial revenue bonds is available. Based on the amount of bond-related debt service, credits can be used to offset up to 80% of a company's state corporate income tax liability each year for the life of the bonds.	Manufacturing, distribution or warehouse facilities and other businesses in Mississippi utilizing industrial revenue bonds issued by the Mississippi Business Finance Corporation may apply.
Ad Valorem Tax Credit	An income tax credit equal to the ad valorem (property) taxes a company pays on inventory is available.	Manufacturers, processors, distributors, wholesalers or retailers may apply.
Sales and Use Tax Exemption for Construction or Expansion	A ½ or full sales and use tax exemption, depending on the county in which the facility is located, is available on eligible machinery and equipment purchases related to a new or expanded facility and on building materials used in construction, provided the materials are purchased directly by the eligible business.	Manufacturers, processors, data and information processing businesses and technology-intensive enterprises are eligible to apply.

Source: MDA

Figure 5: Aerospace Incentives for Firms interested in expanding or locating in MS (cont.)

PROGRAM	BENEFIT	ELIGIBILITY REQUIREMENTS*
Sales and Use Tax Exemption for Bond Financing	A sales and use tax exemption is available to eligible businesses that have obtained bond financing through the Mississippi Business Finance Corporation. A sales and use tax exemption is also available on building materials purchased directly by the eligible company.	All businesses using industrial revenue bonds issued through the Mississippi Business Finance Corporation are eligible.
Fee-in-Lieu	A company may be approved by local authorities to pay a fee in lieu of standard property taxes. This negotiated fee is valid for 10 years but cannot be less than 1/3 of the property tax levy.	Local units of government may consider a fee-in-lieu agreement when a company's private investment in land, building(s) and equipment exceeds \$100 million.
10-Year Property Tax Exemption	An exemption from property taxes on land, building and equipment is available for up to 10 years. School taxes are not exempt.	Eligible businesses include: manufacturers, processors, research and development facilities, refineries, warehouse and distribution facilities, data and information processing companies, telecommunications and technology-intensive industries. Local authorities must approve the exemption.
Exemption on In-State Inventory	An exemption from property taxes on finished goods that will remain in Mississippi is available. School taxes are not exempt. Any taxes paid become a direct credit to Mississippi income tax.	Manufacturers, processors, distributors, wholesalers or retailers are eligible. Local authorities must approve the exemption.
Free Port Warehouse Exemption	An exemption from property taxes paid on finished goods inventories leaving Mississippi is available. The exemption may be for all property taxes and may be perpetual.	Local authorities must approve the exemption.
Growth and Prosperity (GAP) Program Tax Exemptions	Businesses that locate or expand in specific geographic areas of the state may receive state income tax, franchise tax and property tax exemptions for up to 10 years, as well as a sales and use tax exemption on all equipment and machinery purchased during initial construction or an expansion at an approved facility. GAP counties include Adams, Bolivar, Claiborne, Coahoma, Holmes, Humphries, Issaquena, Jefferson, Leflore, Noxubee, Oktibbeha, Quitman, Sharkey, Sunflower, Tallahatchie, Tunica, Washington, and Yazoo counties.	An eligible business must be located in a county designated as a GAP county. To receive a GAP designation, a county must have an unemployment rate that is 200% of the state's annual unemployment rate or 30% or more of its population must fall below the federal poverty rate.
Advantage Jobs Incentives	Many businesses creating new jobs in Mississippi are eligible to receive a rebate equal to a percentage of their Mississippi payroll for up to 10 years. The average wage of all jobs created must meet the program's minimum average wage requirements.	Eligible businesses include any businesses that pay an average annual wage of 110% of the average county or state wage (whichever is less) and create at least 25 jobs. Businesses must provide a basic health benefits plan.

Source: MDA

DoD Spending in Maintenance Repair and Overhaul

The maintenance, repair and overhaul of military aircraft accounts for 3.6 percent of the total MRO industry revenue. Specialties of the military MRO are engine, airframe and component inspections and maintenance, similar to that in the civilian sector. The military MRO sector has experienced a reduction in activity since the troop withdrawal in the Middle East, which created diversification opportunities into the civilian market (Longo, 2017). Table 1 shows the current DoD contracts on military MRO indicating the industry has had sustained longevity, and table 2 demonstrates new military contracts are being issued in the industry (USAspending.gov, n.d.).

Table 1
Current DoD MRO contracts, FY 2018

Firm	Start Date	End Date
The Boeing Company	12/1/2013	6/29/2018
Lockheed Martin Corporation	9/30/2016	8/31/2018
Cherokee Nation Red Wing, L.L.C	8/11/2011	8/31/2018
Systems Implementers Inc	6/13/2012	1/9/2019
M1 Support Services, L.P.	10/19/2016	3/30/2018
McDonnell Douglas Corporation	10/2/2003	1/15/2018

Source: USAspending.gov

Table 2
New DoD Contracts, FY 2017

Firm	Start Date	End Date
Airbus Helicopters, Inc.	1/1/2017	12/31/2019
Standard Aero (San Antonio)	1/30/2017	7/14/2018
Strategic Technology Institute	6/30/2017	7/31/2018
Raytheon Company	5/24/2017	8/15/2018
Drs. Training & Control Systems	8/30/2017	9/30/2018
Simmonds Precision Products, Inc	4/17/2017	9/30/2018
Raytheon Company	2/14/2017	9/30/2017
Maune, Belangia, Faulkenberry Architects PA	3/30/2017	4/30/2018
Engineered Arresting Systems Co	9/21/2017	3/21/2018
Engineered Arresting Systems Cor	12/7/2017	7/31/2018

Source: USAspending.gov

Conclusion

Airbus is producing commercial airliners, helicopters and spacecraft. They have over 12,000 suppliers worldwide and are seeking to expand supplier base worldwide.

Component parts from suppliers world-wide are sent to 14 factories across Europe for segmentation. Segments are assembled together in Toulouse, France, and then sent to final assembly plants like Mobile, Alabama. Mississippi has currently two companies supplying Airbus with component parts; however, the state has the potential to capitalize on supplying the Mobile assembly plant with MRO and plain coating. MRO facilities could be collaborative between Jackson County, Mississippi Economic Development Foundation and the St. Louis, Missouri Economic Development Partnership to facilitate suppliers from St. Louis to have facilities in Mississippi. The military MRO industry was a vibrant industry but has shrunk since the troop withdrawal from the Middle East. This, however, creates a diversification opportunity in the civilian Airbus industry. The problem is that all the suppliers for the Airbus facility in Mobile are in proximity to the Mobile Airport close to Airbus; therefore, there is no real incentive to operate in Mississippi or Florida. Lastly, Mississippi does not have the current aerospace infrastructure to supply the MRO or plane painting and coating industry, which would require recruiting of outside suppliers and workforce development in these areas. Thus, this would not be a profitable industry to focus on recruiting for aerospace defense diversification in Mississippi.

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