

Executive summary



The four-state aerospace showcase

Alabama, Florida, Louisiana and Mississippi each can brag about being a player in the aerospace industry. And there's good reason to like aerospace. It's a \$240 billion industry in the U.S., with workers skilled in everything from assembly line work to engineering. Aerospace is research-intensive and key to the economy of all four states.

But there's only one region where the aerospace interests of all four states intersect. It's a relatively compact stretch along the northern Gulf of Mexico with a portion of Alabama, Florida, Louisiana and Mississippi. And it's become a unique showcase for all four.

Within the Interstate 10 Gulf Coast corridor a win for one of the states can impact the other three. That was made clear during the competition between Boeing and Airbus to build tankers for the U.S. Air Force. Mobile, Ala., which

U.S. aerospace industry	
Sales (est. 2015)	\$240.38 billion
Work force (prelim. 2014)	606,600
<i>Source: 2014 Year-End Review and Forecast from the Aerospace Industries Association</i>	

was promised the tanker plant if Airbus won, was able to convince neighbors to back its effort. The argument was made that the plant would benefit all four states.

Mobile didn't get the tanker project, but Airbus did decide to build an A320 final assembly line at the Mobile Aeroplex. As with the tanker, the neighbors expect they'll eventually benefit from having the plant in Mobile.

It's clear there's much more aerospace and aviation activity in the corridor between New Orleans and Northwest Florida than just the Airbus assembly line. In just the past year com-

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mercial space powerhouse SpaceX started R&D work at NASA's Stennis Space Center, Miss., for a rocket engine that will power a space vehicle to an eventual trip to Mars. And this year there will be a groundbreaking at Eglin Air Force Base, Fla., for the first of two multimillion-dollar reprogramming labs for foreign partners of the F-35 program. In addition, the Mobile Aeroplex is moving ahead on an aerospace R&D center that will involve multiple players.

If there's a key message from this year's study, it's that education and research are becoming priorities. Schools are putting programs in place and research centers are being established, and those already in place are growing.

While much of the attention on the 350-mile stretch of Interstate 10 covered in this book is new, the region actually has a long history of involvement in aviation. It's where the Navy established its first and for a long time only air station, and where NASA created major facilities in the earliest days of the space race.

It's home to two NASA operations involved in building and testing the next generation of NASA spaceships, and where the new breed of private space companies builds and tests space hardware. It also has significant military aviation activities, including pilot training and aerial weapons development. It's where research is conducted not only in aerospace but in related fields like high-performance materials, artificial intelligence/robotics, geospatial applications and more.

Many of the I-10 region's aerospace activities put it in select "clubs." With an Airbus assembly line, it joins a small group of sites where large passenger jets are assembled, and having two NASA facilities puts it in a small group involved in spaceflight. Further, it's the only region that trains pilots to fly two fifth-generation fighters: the F-35 and F-22.

The corridor is just one of the regions in the four states with significant aerospace activities. Alabama, Florida, Mississippi and Louisiana

Aerospace activities at a glance

- Rocket and jet engine testing
- Rocket engine, satellite assembly
- Piston engine assembly
- Unmanned aerial system plant
- Areas approved for unmanned flights
- Jetliner final assembly line
- Maintenance, repair and overhaul
- Military pilot training
- Military electronics/cyber training
- Aviation specialties training
- National Guard aerial combat center
- National Guard helicopter repair depot
- Restricted land and water ranges
- Aerial weapons RDT&E
- Applied geospatial technologies
- Human-machine cognition research
- Advanced manufacturing research
- 43-acre manufacturing plant
- Aerospace parks
- Technology transfer offices
- Business incubators

combined rank as the fourth largest aerospace region in the country, according to the Aerospace Alliance, a non-profit formed in 2009 to promote the interests of all four.

The Northwest Florida portion of the Gulf Coast I-10 aerospace region is part of the No. 2 state in the nation for aerospace, aviation and space establishments. Florida has more than 2,000 companies employing 82,000 plus workers, and it's continuing to grow. The state is the No. 1 in PricewaterhouseCoopers 2015 Aerospace Manufacturing Attractiveness Rankings.

"Florida has all of the resources needed for aviation and aerospace companies to grow and push the boundaries of innovation," said Bill Johnson, Florida Secretary of Commerce and president & CEO of Enterprise Florida, Inc.

"With the strongest workforce in the industry, the infrastructure needed to move products efficiently around the world, a pro-business cli-

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GCAC illustration, Google Earth map

mate, and the largest fully accredited aviation and aerospace university in the world, Florida makes a very compelling case for companies searching for location and expansion opportunities.”

The best-known aerospace and aviation activity in Florida is in the region called the Space Coast. It’s home to Kennedy Space Center, Cape Canaveral and Patrick Air Force Base. Since the earliest days of the space race this is the location where Americans ventured into space. It’s also the area where private space companies have set up operations to take advantage of idled NASA facilities.

The South Alabama portion of the Gulf Coast I-10 corridor is part of a state best known for north Alabama’s Huntsville, home of the Army’s Redstone Arsenal and NASA’s Marshall Space Flight Center.

According to the U.S. Department of Labor’s Bureau of Labor Statistics, Alabama has the third highest concentration of aerospace engineers in the nation, and Huntsville the third highest concentration of MSAs. The fourth-

largest concentration in non-metro areas is in Southeast Alabama.

Alabama has more than 300 companies engaged in the aerospace and defense sectors, according to the Alabama Aerospace Industries Association. The supply chain includes original equipment manufacturers, technical services, maintenance, repair and overhaul, and parts, suppliers and vendors.

The South Mississippi portion of the I-10 corridor, home to NASA’s Stennis Space Center, is part of a state that’s become a key player in the growing field of unmanned aerial vehicles. Aurora Flight Sciences, Northrop Grumman Unmanned Systems and Stark Aerospace all build unmanned aerial systems in Mississippi. It’s also home to the Rasper Flight Research Laboratory at Mississippi State University in Starkville, which in May 2015 was chosen by the Federal Aviation Administration to head a team of 16 universities as a center of excellence for UAS research.

Pioneer Aerospace has made parachute systems in the state since the 1930s, and Eaton

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Aerospace makes commercial aircraft components. GE Aviation makes jet engine components at two locations.

Louisiana's aerospace footprint is best known for NASA's Michoud Assembly Facility in East New Orleans, where the first stage of the Saturn V rocket was built, as well as external fuel tanks for the Space Shuttle program. Today it's building components for the Space Launch System and Orion spacecraft. South Louisiana is also the site of an 82,300 square-foot Bell Helicopter assembly facility at Lafayette Regional Airport, which will begin making Bell 505 JetRanger X helicopters in 2016.

AAR Corp. and Northrop Grumman operate major maintenance, repair and overhaul facilities at Chennault International Airport in Lake Charles, and Aviation Exteriors provides aircraft painting solutions in New Iberia.

That the four states and regions within them would pursue aerospace is no surprise. Aerospace is an economic jewel, a research intensive industry that uses talent ranging from those who design aircraft and those who assemble them to those who fly or maintain them. It involves civilian and military activities. According to the Aerospace States Association, nationally the aerospace industry contributes about \$120 billion in exports sales, the largest trade surplus of any manufacturing industry in the U.S.

Alabama, Florida, Louisiana and Mississippi leaders are pursuing more aerospace activities, notably foreign investments.

While each of the states and local communities have economic development groups that pursue aerospace, the I-10 corridor does not have an organization acting as its champion for the region. True, there are multiple economic development groups that sometimes work together, but there's no single go-to group with a broad understanding of the four-state cluster's capabilities.

The need for a comprehensive explanation of this region's aerospace capabilities, and how that capability fits in with the capabilities of the

four states, is what prompted the authors to compile this book.

Here are the key findings of this ongoing study. The list includes new findings along with those from the League's past studies:

General

- The I-10 region is involved in a range of aerospace and aerospace-related activities, including aircraft manufacturing, space flight, propulsion systems, military aviation, unmanned aerial vehicles, robotics, aerial weapons, high-performance materials, advanced manufacturing and RDT&E.
- Aerospace is a target industry for Alabama, Florida, Mississippi and Louisiana. Multiple local economic development groups have also targeted aerospace, and state and local leaders have joined in a mix of regional alliances to pursue the aerospace industry.
- The Aerospace Alliance was formed in 2009 to promote aerospace activities in the four states.
- Despite the level of activity in the I-10 region, there is no "go-to" organization that represents the aerospace interests of the four-state I-10 region.
- The United States is a low-cost leader among developed nations when it comes to manufacturing, and reshoring is a growing trend. That bodes well for the region and each of the four states as it seeks more foreign investments and promotes its manufacturing capabilities.

Airbus

- The Airbus A320 final assembly plant at Alabama's Mobile Aeroplex will open in 2015 and deliver its first jetliner in 2016.
- The Airbus plant is expected to attract suppliers and vendors to the region. Some will want to be close to the plant and others will want to be further away to keep from competing for workers.
- Additional aerospace activities directly or

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indirectly caused by the Airbus plant will take years to develop. Potential newcomers will keep an eye on progress of the plant before making what could be an expensive investment in the region.

- Airbus in Mobile, the F-35 training center at Eglin Air Force Base, Fla., and Stennis Space Center, Miss., all attract international interest in the region.

Military

- Military activities bring billions into the region through payroll, contracting and other activities. Between 2000 and 2014, 4,815 companies in 19 I-10 counties/parishes were awarded 78,196 DoD contracts valued at more than \$80.5 billion.
- The military's huge complex in this region is a vast schoolhouse that trains tens of thousands of students each year who earn wings, hone combat skills or learn technical fields, including avionics and aircraft maintenance.
- Military aviation activities in the region include pilot and flight officer training, weapons development, search and rescue, unmanned aerial systems, logistics and a variety of combat missions.
- The U.S. Coast Guard has port activities throughout the region, as well as the Aviation Training Center in Mobile, Ala., where all Coast Guard aviators learn to fly a particular aircraft type.
- The region's nine bases with aviation missions have between them more than three dozen aircraft types, ranging from high-tech \$145 million fighters all the way down to relatively low-cost, ubiquitous, orange and white Navy trainers and drones.
- Aviation-focused military bases in the Gulf Coast aerospace corridor saw their replacement value increase in 2014 over 2013 to a combined \$18.4 billion.

Corporate

- Major U.S. aerospace and defense compa-

nies have operations in the Gulf Coast region, including many with multiple sites. Foreign aerospace and defense companies and non-aerospace companies also have a sizeable footprint in the region.

- There are multiple technology transfer offices and incubators in the region, along with a patent association formed in 2010 to focus on intellectual property issues.
- Aerospace activities are in growth sectors, including unmanned aerial systems, advanced materials and geospatial technologies. In addition to unmanned aerial systems, three federal operations are involved in some aspect of unmanned underwater vehicles. Okaloosa County, Fla., is also developing an indoor unmanned systems center that will include air, land and maritime.

Unmanned/robotics

- Fuselage work on the Global Hawk and final assembly of the Fire Scout unmanned aerial systems is done in Moss Point, Miss., by Northrop Grumman. The company has room to expand at that location.
- Unmanned systems are flown at Eglin Air Force Base, Fla., in military air space, and at Camp Shelby, Miss.
- The Institute for Human and Machine Cognition in Pensacola, Fla., is a premiere research center in robotics.

R&D/innovation

- R&D activities in the region involve federal, state and corporate players. Eglin Air Force Base, Fla., spends more in R&D each year than many prestigious universities.
- Eglin Air Force Base, Fla., will be breaking ground in 2015 and 2016 on two new F-35 reprogramming labs.
- The Mobile Airport Authority is creating a \$25 million aviation-focused research center with offices and collaboration space for at least six Alabama universities.
- Commercial space company SpaceX is cur-

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rently doing R&D on its next generation rocket engine at Stennis Space Center, Miss.

- SSC and Michoud each plays a role in federal and commercial space ventures. Each has under-utilized equipment.
- The GE Aviation plant in Auburn, Ala., is the site where the company will mass produce 3D printed parts for its LEAP engine.

Aerospace parks

- Aerospace and aviation-focused technology parks have been established or are developing across the region.
- Many of the non-commercial and commercial airports in the region have land and buildings available for new tenants.
- The close proximity of Mobile Aeroplex in Mobile, Ala., and the Jackson County Aviation Technology Park in Moss Point, Miss., forms a hub of aircraft manufacturing in the central portion of the corridor.
- The close proximity of Stennis Space Center, Miss., and Michoud Assembly Facility, New Orleans, forms a hub of spacecraft manufacturing and testing in the west portion of the I-10 corridor.
- SSC has a 3,900-acre park ready for development, and at Michoud NASA hopes to turn 300 surrounding acres into an advanced manufacturing park. The National Center for Advanced Manufacturing is at Michoud.
- Multiple sites in Northwest Florida, many of them aerospace-focused, have been certified as ready for development by Gulf Power's First Sites program.
- NASA is seeking companies interested in using four underutilized rocket engine test stands at Stennis Space Center, Miss.

Education/workers

- There are 16 universities, several with "very high" research activity, with interests in the Interstate 10 region. One community college is among the nation's top associate degree producers in science, technology, engineer-

ing and math.

- The Crestview-Fort Walton Beach-Destin MSA in Florida has the nation's 10th highest concentration of aerospace engineers. In Florida, only the Palm Bay-Melbourne-Titusville MSA has a higher concentration.
- States and local areas have workforce programs to train blue and white collar workers for the aerospace and related industries. Many of the programs are company specific. Alabama, Louisiana, Mississippi and Florida are right-to-work states.
- High schools in the region have programs targeting aerospace, advanced materials and geospatial career fields.

The authors hope this study will provide the public, development officials and politicians with a better understanding of the capabilities of this region in a range of science, technology, engineering and math fields. The Gulf Coast Reporters' League believes there's a lack of appreciation of the level of capabilities found in the region. Understanding what's here and working together can benefit the broader Gulf Coast region.

Airbus has been a wakeup call, certainly for Northwest Florida. During the 2013 Gulf Power Economic Symposium, the vision of a region on the cusp of change was a compelling message.

"Northwest Florida, you have an opportunity to completely redefine yourself," said Will Weatherford, who at the time was speaker of the Florida House.

Stan Connally, president and CEO of Gulf Power, said a transformation was already underway in Mobile thanks to Airbus.

"That town is reinventing itself," Connally said. "We have a real opportunity right here ... to be a partner in that redefinition," he said.

*David Tortorano
Co-founder/Editor
Gulf Coast Reporters' League
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