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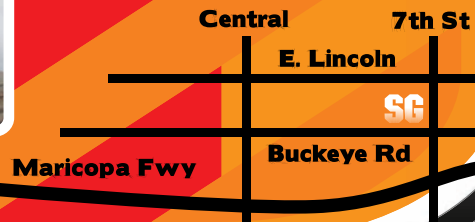
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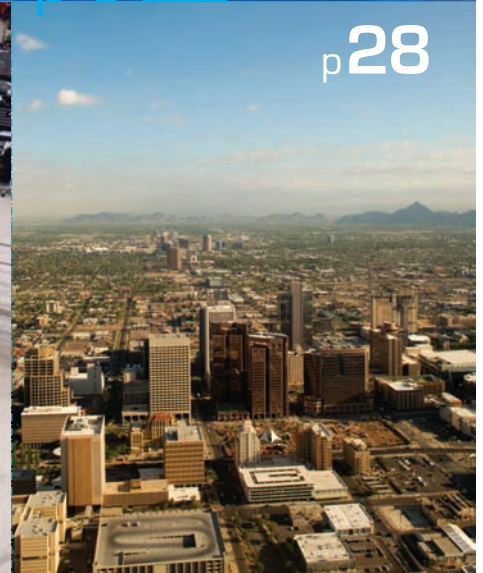
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PRESIDENT Trifon M. Kupanoff, Jr.

PUBLISHER Michael A. Kupanoff

ACCOUNT EXECUTIVE Jessica Knop-Ramirez

EDITOR Tammy LeRoy

CONTRIBUTING EDITOR Chris Mignella

CONTRIBUTING WRITERS

Arizona Office of Tourism, Milton D. Erikson, Greater Phoenix
Economic Council, Richard Hansen, Mark Weathers

CREATIVE DIRECTOR Neal McDaniel

ONLINE SERVICES DIRECTOR Theo Tigno

ACCOUNTING MANAGER Jessica Thompson

ADVISORY BOARD Chris Mignella, Mark Weathers, John Lewis,
Dante Fierros, Mickey Gartman

EDITORIAL AND ADVERTISING OFFICE:

Precision Magazine
15170 N. Hayden Road, Ste. 5, Scottsdale, AZ 85260
Phone: 480.443.7750 • Fax: 480.443.7751
Email: precisionmag@lpimultimedia.com

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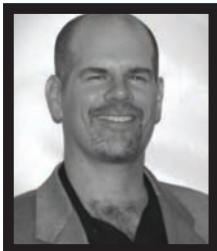


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To all the participants in the 2010 Farnborough Air Show, greetings from the state of Arizona and welcome to this special issue of *The ATMA Precision News Magazine*. This magazine is published by the most active chapter of the country-wide National Tooling and Machining Association and is normally distributed

to precision machining business, their customers and suppliers in the state of Arizona in the Southwest U.S.

This special issue is dedicated to raising global awareness of the experienced and capable precision machining supply chain located in the fast-growing southwestern U.S.A. Home to many large aerospace, defense and semiconductor OEMs, the Arizona region has developed a network of small to medium-sized precision manufacturers that look forward to serving the needs of the global aerospace market. Whether you are interested in making supply chain contacts, establishing a manufacturing presence of your own or simply visiting our beautiful state, this magazine will have something for you.

The Arizona Tooling and Machining Association is dedicated to serving the needs of the local precision machining businesses and works to accomplish things our members could not achieve alone. We focus on Workforce Development, Political Advocacy, Sharing of Technology and Marketing. On behalf of the 85 precision manufacturers, our 45 supporting associate members and our many government, education and community partners, I hope you have a wonderful experience at the Airshow and invite you to explore opportunities in Arizona at your earliest convenience.

Enjoy the Air Show!

MARK WEATHERS
PRESIDENT,
ARIZONA TOOLING AND
MACHINING ASSOCIATION



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**ON THE RADAR
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LOCATION: CENTRAL ARIZONA

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... TO THERE

LOCATION: MARTIAN PLATEAU

The University of Arizona has served as “Mission Control” for the *Spirit* and *Opportunity* rovers on Mars.

AEROSPACE IN ARIZONA: A DRIVING FORCE FOR PROSPERITY



A necessary part of Arizona's move toward a high-tech economy is our sustaining and further developing high-skilled, high paying jobs—such as those created in the aerospace and defense industries.

Arizona ranks in the top 10 for related aerospace exports in the United States. There are nearly 500 companies employing over 250,000 professionals within the industry, and the U.S. Department of Defense (DOD) places Arizona in the top five states for DOD contracts.

Arizonans should take great pride in the important programs that reside in our state such as Raytheon Missile Systems—the Tucson plant is the only facility in the country that can produce fully-assembled missiles from start to finish for all U.S. and allied military customers. It helps keep our troops safe in Iraq and Afghanistan, while protecting our homeland from unstable regimes abroad.

NASA's next generation space shuttle mission will feature critical technological advances created by Paragon Space Development Corporation—including the first new space suit in over 30 years. Tucson's Paragon is also working on essential life support systems for NASA's Orion Exploration Vehicle, as well as with the U.S. Navy on a specialized suit and helmet to protect divers in contaminated waters.

Honeywell's \$12 Billion aerospace business is a leading global provider of integrated avionics, engines, systems and service solutions for aircraft manufacturers, airlines, business and general aviation, military, space and airport operations.

The bigger players in the Arizona aerospace industry also include companies such as Boeing, General Dynamics and Lockheed Martin. However, the majority of companies in the area are small to medium-sized businesses that are suppliers to the larger companies.

Aerospace and defense related parts account for a majority of Arizona's export products. In 2008, exports from the state to the rest of the world grew by more than a half-billion dollars from 2007, a 2.68 percent increase to \$19.74 billion. Data from the U.S. Department of Commerce and the Arizona Department of Commerce indicate electrical machinery was the most in-demand, accounting for \$7.2 billion.

I believe the aerospace and defense industries are and must continue to be a driving force for our state's prosperity. It accounts for 57,000 jobs in Arizona with a total industry payroll of \$3.4 billion.

I have no greater focus than to grow jobs in Arizona, and, given the right tools, we will do just that, together.

One way to stimulate the Arizona economy is for government to know when to provide support to our industries and to know when to step aside allowing the creators of jobs and wealth to energize the market place.

We must work together so these programs and industries remain healthy, and we must ensure our state is positioned to attract new programs in the future. With the recent creation of the Arizona Aerospace Institute and the expertise of the Arizona Aerospace and Defense Commission, we are on the right path to expanding this critical component for Arizona's economy.

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by MARK WEATHERS

THE SECRET **IN THE DESERT**

ARIZONA. What do you think of when you hear the name of this southwestern U.S. state? Wild West movies with gun-slinging cowboys? Vast open deserts populated by cactus and rattlesnakes? Brilliant green golf courses set among sun-baked boulders? The celebrated Grand Canyon? Center stage for U.S. immigration policy debate?

While all of these things can be found in our fast growing state, there is one thing most people do not think of when they hear the word "Arizona:" manufacturing. Yes, high-tech manufacturing is a strength for one of the fastest growing regions of the U.S. Arizona is a hub for aerospace, defense, semiconductor and optics manufacturing, and is rapidly growing in the bioscience and alternative energy sectors. How did this hot and dry desert become a high-tech supply chain powerhouse? Read on!



Like the signature saguaro cactus that begins life in the shade of hardy desert trees, thousands of small high-tech manufacturers have emerged under the protective branches of such large companies as Honeywell Aerospace, Raytheon and Intel. And like the slow-growing but resilient saguaro, these companies now dot the skyline and help define the state of Arizona.

Attracted by the favorable climate—business, labor and weather—companies such as Garrett Air Research and Hughes Helicopter moved operations to Arizona. Currently recognized as Honeywell Aerospace and Boeing, these aerospace OEM's share the state with Raytheon, BAE Systems, Intel, W.L. Gore and many others. Like their peers, these companies began to outsource their machining and tooling work to small, agile, cost-effective shops in the '80s and '90s. Fostered by U.S. support of small business development and entrepreneurship and enabled by advances in computer-aided design and manufacturing, these shops proliferated and grew. Ranging in size from five to four hundred employees, these small businesses form the backbone of the supply chain in many critical industries.

Today these precision manufacturers perform a variety of high-tech tasks in support of medical, semiconductor, automated equipment, alternative energy, aerospace and defense OEMs. Many companies specialize in close-tolerance machining of difficult alloys such as titanium, inconel, waspalloy and tungsten as well as a variety of less challenging materials from aluminum to stainless steel. Rotating components and temperature resistant combustion parts for turbine engines are routine jobs for local shops using computer controlled milling, turning and grinding in five or more axes. Non-traditional machining through laser, waterjet and EDM are supported as well, and many shops are ISO 9000 or AS9100 certified.

Exotic material joining is also common, including welding vacuum brazing and electron beam welding. Other specialists provide coatings from hard chrome to plasma spray deposition. Still others support the manufacturing process from heat treating through nondestructive testing, as well as plating, anodizing, painting and other wet processes. In addition to NADCAP accreditation, many of these suppliers are specifically listed in the approved supplier lists of aerospace OEMs. Support of the existing fleets is also a big part of the regional expertise, with repair and overhaul activity taking place throughout the supply chain.

Aviation is not the only aerospace focus in the state. The cloudless night skies of the Arizona have made the state an astronomy center. The southern city of Tucson has become a major center for manufacturing of high-tech optics and suppliers there support many ground and space-based systems. The mountainous Flagstaff area to the north is the home of W.L. Gore and center of expertise for medical and green manufacturing.

Speaking of green, at least in the environmental sense, this color is increasingly associated with Arizona. With over 300 days of sunshine each year, the state is one of the best in the country for the application of solar power. Numerous solar companies have set up shop in the Phoenix area, also known as the "Valley of the Sun." Local solar companies include Stirling Energy Systems, First Solar and Suntech. Another rapidly growing sector in Arizona is BioScience. Research and development at state universities and the heavy investment in the Translational Genomics Campus and associated research partners will make Arizona a top player in this emerging field.

There are a few other notable advantages that Arizona provides to potential partners who want to establish a local presence or develop a relationship with a local supplier. Our commitment to education and workforce development are providing a steady stream of qualified workers. The proximity to Mexico allows access to low-cost labor for cost blending advantages while maintaining quality control.

F-16 fighters out of Luke Air Force base practice training maneuvers over southwest Arizona.

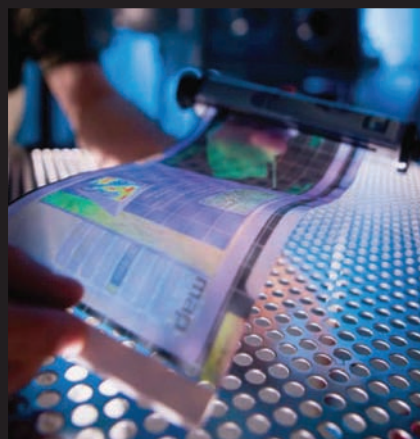


MANY LOCAL AEROSPACE AND DEFENSE CONTRACTORS HAVE COME TO RELY ON ARIZONA'S SUPPLY BASE.

Our sunny climate and lack of threats from natural disasters ensure the continuity of production. Our central location in the western U.S. supports easy interaction with aerospace hubs in California and Washington states, as well as numerous OEMs located here.

As you can see, the State of Arizona has a broad and capable industrial base committed to providing low-cost manufacturing to OEMs and Tier Ones around the world. Our agile and entrepreneurial small shops make Arizona's high-tech manufacturing supply base one of the world's most capable and cost-effective for machined and fabricated components. As the President of the Arizona Tooling and Machining Association, I urge you to contact us to explore our members as potential partners in your supply chain. ■

Mark Weathers is President of the ATMA.



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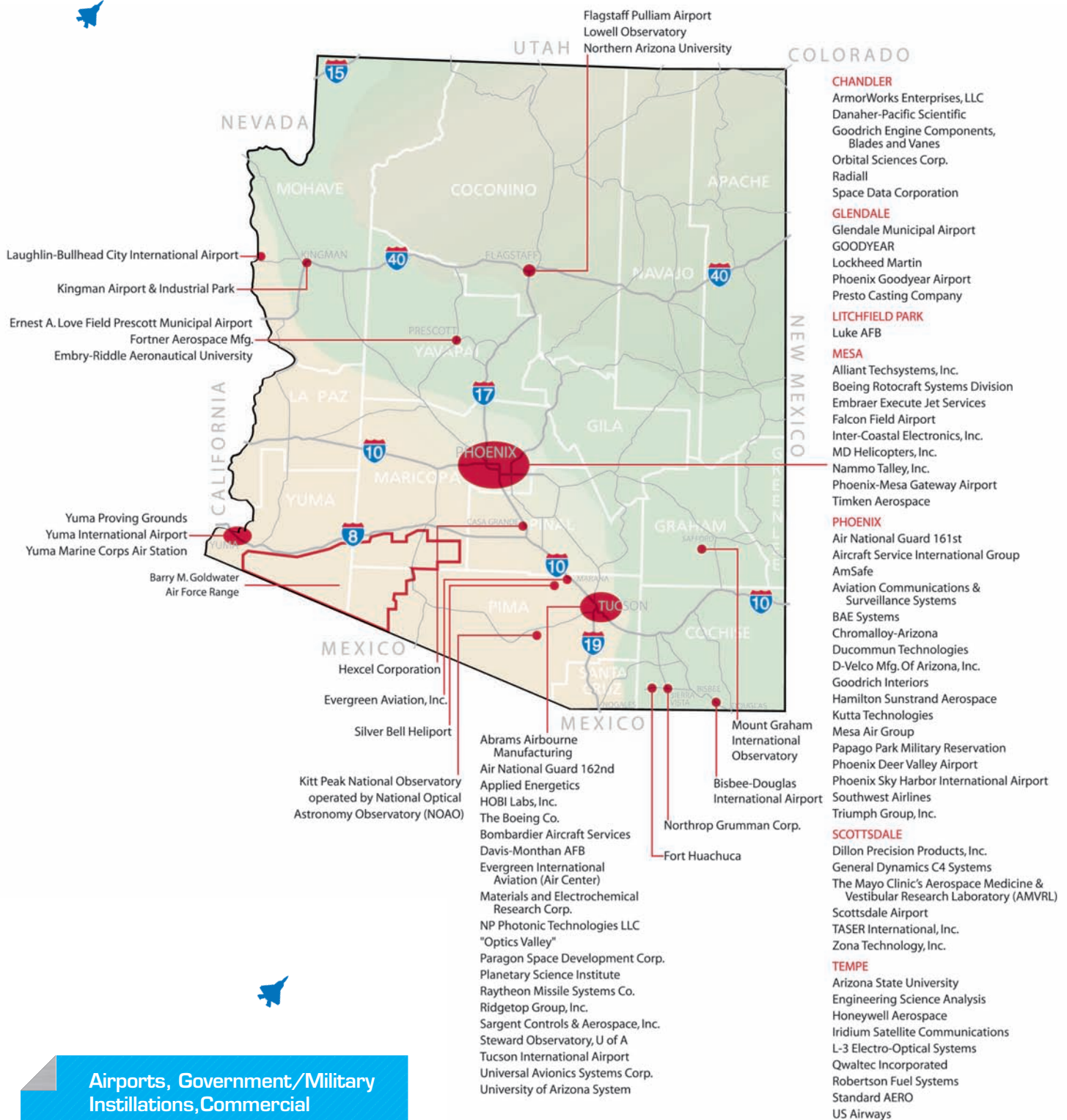
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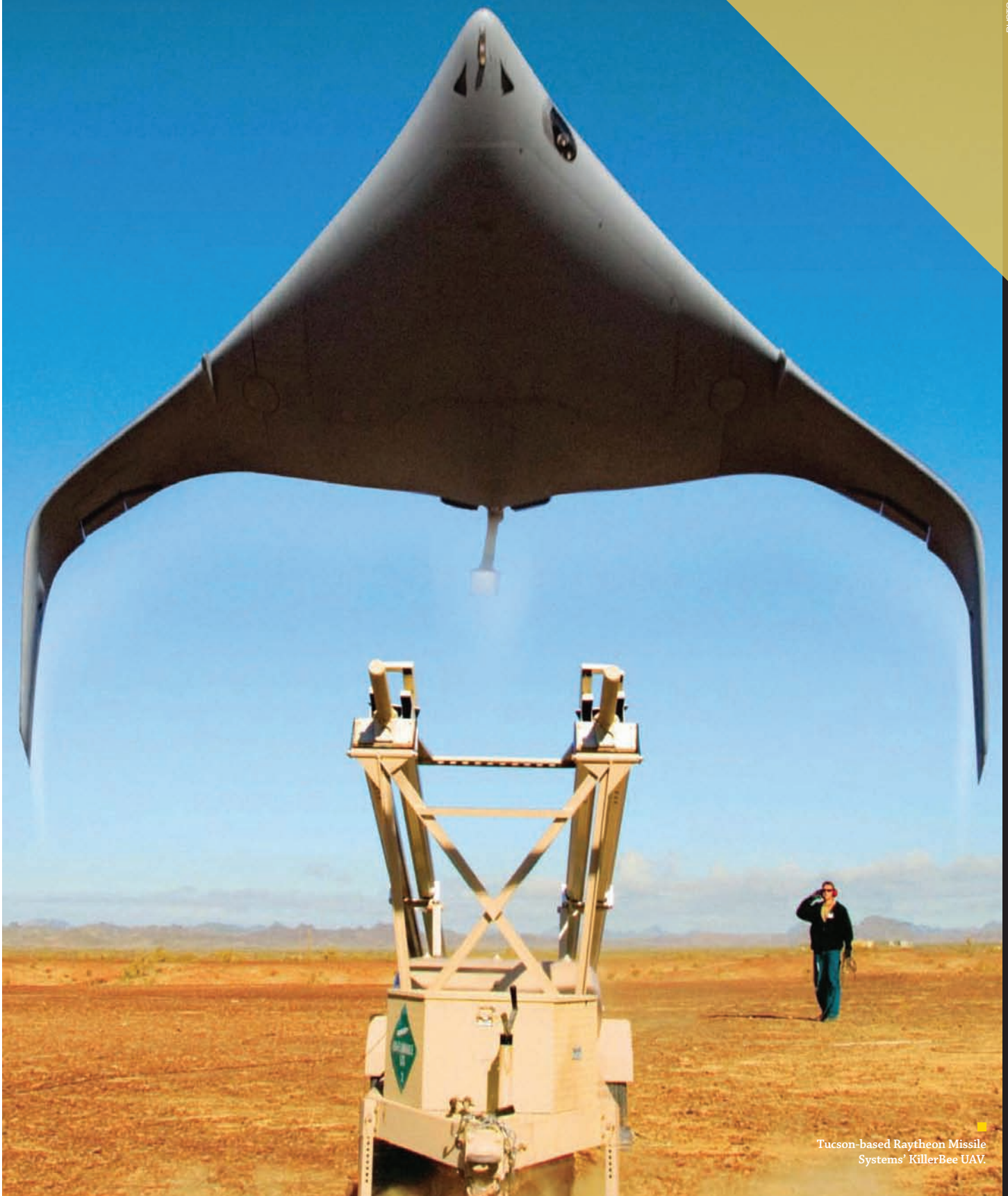
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Arizona is home to one of the largest and most vibrant Aerospace and Defense clusters in the United States. These firms are engaged in a full range of activities including production of aircraft, aircraft parts, weaponry, navigation, guidance, optics and aeronautical systems.

The aerospace and defense sector activity in Arizona is broad and deep, offering firms of all sizes unusual opportunities for growth. It was recently reported that in 2004, Boeing alone spent \$1.2 billion with 186 Arizona companies in support of its operations within the state. Other industry leaders with substantial interests in Arizona include Honeywell, Raytheon, Northrop Grumman, General Dynamics C4 Systems, Orbital Sciences, Sargent Controls & Aerospace, Universal Avionics Systems, Lockheed Martin and Hamilton Sunstrand and many more. All of these industry leaders work closely with numerous small and medium-sized suppliers locally, nationally and internationally to support their operations.

Arizona has a long tradition of political and social support for the critical mission of aerospace and defense companies. Arizona's pro-business environment provides firms in this sector with a globally competitive cost structure fostered by targeted state incentives.

In addition, Arizona offers a large and growing professional workforce fueled by outstanding university and community college programs. Several military installations in Arizona also contribute considerable talent to the aerospace and defense industry.

Arizona's infrastructure assets, low operating costs, great flying weather, quality workforce and the commitment of state, local and educational leaders to the aerospace and defense sector make Arizona an optimum location for firms considering a United States (U.S.) expansion or relocation.

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3
INTERNATIONAL
AIRPORTS
17
MILITARY
INSTALLATIONS
4,800
BOEING
EMPLOYEES
12,500
RAYTHEON
EMPLOYEES
1,000+
DEFENSE CON-
TRACTS IN 2009

KEY FEATURES OF ARIZONA'S OPERATING ENVIRONMENT

Arizona offers a globally competitive operating cost structure. In addition to low payroll tax rates and labor costs, aerospace companies benefit from incentives such as our Foreign Trade Zone and Military Re-Use Zone programs that can often provide the lowest effective tax rates available anywhere in the U.S.

LATITUDE
31°20' N to 37° N
LONGITUDE
109°3' W to 114°49'

SECURE PHYSICAL ENVIRONMENT

Arizona is notable for the absence of catastrophic weather-related events. Recently, Phoenix ranked second in the *Risk and Insurance* magazine annual study of the 10 safest cities in the U.S. This study evaluates the propensity of cities to experience catastrophic events. The perils included in the analysis are hurricanes, earthquakes, terrorism, severe thunderstorms and winter storms. Although only metropolitan areas with populations greater than one million people were included in the study, based on the study's criteria, virtually every city in Arizona could have produced a similar finding.

GLOBALLY COMPETITIVE OPERATING COST STRUCTURE

An Arizona location can often provide the lowest effective tax rates on business investments available anywhere in the U.S. In fact, in many cases, overall business costs in Arizona are below average for the U.S. and are considerably below those of California. And, as a workforce benefit, the cost of living in Arizona is below competing centers for technology.

HIGHLY FAVORABLE CORPORATE INCOME TAX STRUCTURE

Arizona corporate tax law is structured to provide benefits for firms located in Arizona and doing business outside of the state. Arizona is one of only two states without a "throw-back" provision, meaning that Arizona does not reclaim income from activity that was not taxed in other states or countries.

COMPETITIVE WAGES WITH LOW PAYROLL TAXES

Arizona labor wage rates are 14 percent below the national average in the United States. Worker's Compensation and Unemployment Insurance rates (payroll taxes) are lower than any other state in the western and south-western regions of the U.S., and are lower than 92 percent of all jurisdictions in the U.S.

PRO-BUSINESS ENVIRONMENT

Arizona has historically passed fiscal legislation favorable to business. Notable aspects of the tax code include no Corporate Franchise Tax, no Business Inventory Tax, no Income Tax on dividends from out-of-state subsidiaries and no Worldwide Unitary Tax.

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F-16s taxi down the runway at Arizona's Luke Air Force Base.

INCENTIVES

Arizona offers a number of incentives for high technology companies. The Arizona Department of Commerce administers the state incentive programs including Enterprise Zones, Military Re-Use Zones and Arizona Job Training Grants, considered one of the best workforce training grant programs in the nation. In addition to state-based incentives, Arizona offers:

- *Reduced property tax rate for renewable energy equipment.*
- *Foreign Trade Zone allows qualifying companies to have real and personal property taxes assessed at 5 percent of full cash value (instead of 23 percent), resulting in a 78 percent abatement.*
- *Enterprise Zone program enhances opportunities for private investment in certain areas. A company located in an Enterprise Zone may receive tax credits by creating new quality jobs.*
- *The recently expanded Research and Development Income Tax Credit awards qualified research and development conducted in Arizona.*

• *Personal Property (machinery, equipment or other personal property) used in manufacturing or other commercial operations is exempt from transaction privilege tax.*

• *Accelerated Depreciation encourages new capital investment and reduces personal property tax liability.*

• *Sales Factor gives multi-state corporations the option of choosing either an 80 percent sales factor or a double-weighted sales factor apportionment method to compute Arizona taxable income.*

MILITARY

Arizona is home to 17 military installations providing employers with significant recruiting opportunities. The most notable active installations include The Barry M. Goldwater Range, Davis-Monthan Air Force Base, Fort Huachuca, Marine Corps Air Station Yuma, Luke Air Force Base and Yuma Proving Ground.

Arizona's historically strong defense industry and the value of defense contracts awarded to companies operating in the state rose from \$4.1 billion to \$12.1 billion from 2000 to 2009, according to the Defense Department. And, the military contracts are a large and diverse lot, including 3,636 Arizona firms, according to fedspending.org. Many Arizona companies are leaders in areas such as UAVs, aircraft, missiles, space vehicles, battlefield

communications and guidance systems. Arizona workers produce everything from Apache Longbow attack helicopters to stimulated training for night vision operations.

ARIZONA: THE RIGHT CLIMATE TO GROW YOUR BUSINESS

Many of the largest aerospace and defense firms maintain significant operations within the state, but small and medium-sized companies excel here also.

- *According to the Defense Department, more than 1,000 Arizona companies received contracts of \$25,000 or more last year.*
- *CAE announced an alliance with Honeywell in October 2008 to develop training for Honeywell customers at the company's Arizona headquarters. CAE has curricula for Universal, Honeywell and Garmin systems, with Garmin predominating.*
- *Increased growth for the larger aerospace and defense companies also presents potential for local companies that supply them. For example, Boeing employs approximately 4,800 Arizonans who support a variety of the company's program and partners with more than 570 suppliers and vendors across the state. The Boeing/Arizona partnership already delivers roughly \$1.1 billion of economic activity in the state every year.*

MANY OF THE LARGEST AEROSPACE AND DEFENSE FIRMS MAINTAIN SIGNIFICANT OPERATIONS WITHIN ARIZONA.

PHOENIX SKY HARBOR INTERNATIONAL AIRPORT IS SERVED BY OVER 20 CARRIERS, HAS OVER 1,200 ARRIVALS AND DEPARTURES DAILY AND MOVES APPROXIMATELY 600 TONS OF CARGO DAILY.

Raytheon Missile Systems accounts for more than one-third of Tucson's 30,000 manufacturing jobs. In May 2010, The U.S. Air Force awarded Raytheon Company \$96.7 million for a third production lot of the Miniature Air Launched Decoy (MALD™). MALD is a state-of-the-art, low-cost, decoy flight vehicle that is modular, air-launched and programmable. It weighs less than 300 pounds and has a range of approximately 500 nautical miles (about 575 statute miles). One major program is the Ground-Based Midcourse Missile Defense Program, which employs ground-based missiles to destroy incoming enemy rockets in midflight. The program contributed \$193 million to the state's economy in 2007 and supported almost 2,000 jobs. Orbital's Launch Systems Group estimated that more than 400 of its 1,500 employees now work on the missile program. Raytheon Vice President Joe Maggio said at least 500 of its 12,500 Tucson employees have daily contact with it. Because of the program, Orbital's Chandler, Ariz. workforce has grown to 1,500 from 450 in a few years.

General Dynamics C4 Systems has been awarded a \$12.4 million contract modification to the Warfighter Information Network – Tactical (WIN-T) Increment 3 contract by the U.S. Army to lead a defense-industry team in the development of a line-of-sight communications payload for Extended Range/Multi-purpose (ER/MP) Unmanned Aircraft Systems (UAS). The U.S. Army has also awarded General Dynamics C4 Systems a \$164 million contract that will enable a General Dynamics-led team to begin low-rate initial production of the Warfighter Information Network – Tactical (WIN-T) Increment 2.

Honeywell Aerospace has seen revenue grow from \$8.8 billion in 2002 to an estimated \$11 billion this year. It makes everything from airplane cockpit controls to tank engines at its Phoenix and Tempe facilities. Honeywell announced April 2010 that it will provide its full suite of avionics; including its IntuVue™ 3-D advanced weather radar, to VRG Linhas Aereas S.A. in a contract valued at \$40 million over the life of the contract, including aftermarket support.

Astronomy, Planetary Sciences, and Space Sciences Research Opportunities to Advance Arizona's Economic Growth, the report found that research in APSS in 2006 alone pumped over \$250 million into Arizona's economy. By comparison, this is equivalent to the economic impact of the Super Bowl every two years.

IDEAL INFRASTRUCTURE FOR AEROSPACE, DEFENSE AND AVIATION

Arizona has 81 airports, three of which are international airports. The largest—Phoenix Sky Harbor International Airport—is served by over 20 carriers, has over 1,200 arrivals and departures daily and moves approximately 600 tons of cargo daily. Tucson International Airport and Yuma International Airport add an additional 200 daily flights. In addition, Metro-Phoenix offers location opportunities on two former military bases. The largest is Phoenix Mesa Airport and provides a runway length of 10,400 ft. Jet capable airports also exist in dozens of smaller cities and towns throughout the state. ■

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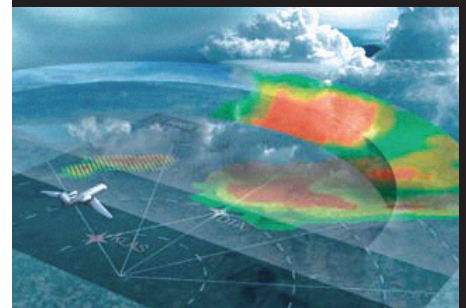
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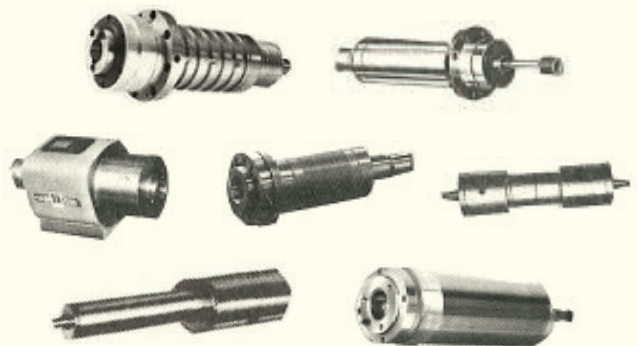
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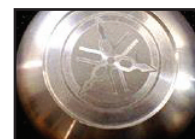
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ARIZONA: BUILDING YOUR COMPETITIVE WORKFORCE

by **MILTON D. ERIKSON** AND **RICHARD HANSEN**

Arizona has long been home to a broad and diverse technology based industry in aerospace, aviation, electronics and information technology. These industries have continued to grow and flourish thanks to a great climate, low cost of doing business, proximity to West Coast U.S. markets, right to work legislation and the steady supply of a skilled and well educated workforce.

Arizona's three state universities are all nationally known not only for their graduates but also for the cutting edge research that occurs on their respective campuses. Arizona is also home to the largest community college district in the U.S., granting two-year associate degrees and specifically serving the Greater Phoenix area. Other communities around the state can also point to community colleges in their areas that support the workforce needs of their local technology industry. The aerospace, aviation and defense industries throughout the state have always looked to the community colleges to prepare their technical workforce as well as prepare those who wish to pursue four-year degrees.

Arizona's secondary public school system also boasts a strong career and technical education division that prepares students to enter the workforce directly with the required skills needed by the industry as well as preparing

those who wish to enter the community college or university systems. Collectively and collaboratively Arizona's education system has continued to provide the aerospace, aviation and defense industries with the critical workforce they require to compete globally. Industries involvement at all levels of the education system helps to ensure that faculty are aware of industries needs and that curriculum content is comprehensive and current.

Arizona also boasts a wide range of nationally recognized private schools and universities such as Embry Riddle Aeronautical University and the Thunderbird School of Global Management.

Supporting the encouragement of youth, young adults and others to pursue careers in aerospace, aviation and defense related OEM companies and their suppliers remains a



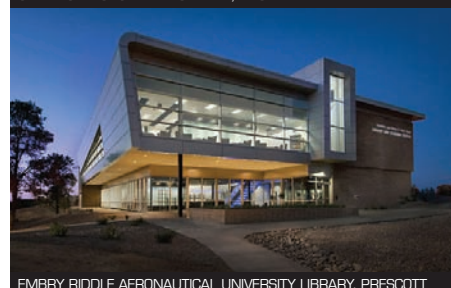
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key component of Arizona's workforce development strategy. Industry sponsored events such as the Avnet Tech Games, First Robotic, and National Championship winning Arizona Battlebots, give students at all grade levels (secondary and post-secondary) the opportunity to apply their formal education in creative and innovative environments. Additionally, resources such as Dream It Do It (dreamitdoitaz.com) provides valuable information about careers in manufacturing to students and others who play a role in career decision making, such as parents, teachers, and guidance counselors.

Finally, for companies looking to expand their existing Arizona-based workforces or those looking to start up an operation in the state for the first time, workforce training grants and/or recruitment assistance programs are available for qualifying companies. ■

Further information, please contact:

RICHARD (RICK) HANSEN

Associate Director, Center for Workforce Development
Maricopa Community Colleges
2411 W. 14th St.
Tempe, Arizona 85281
Phone: 480.731.8204
Fax: 480.731.8210
Email: Rick.Hansen@domain.maricopa
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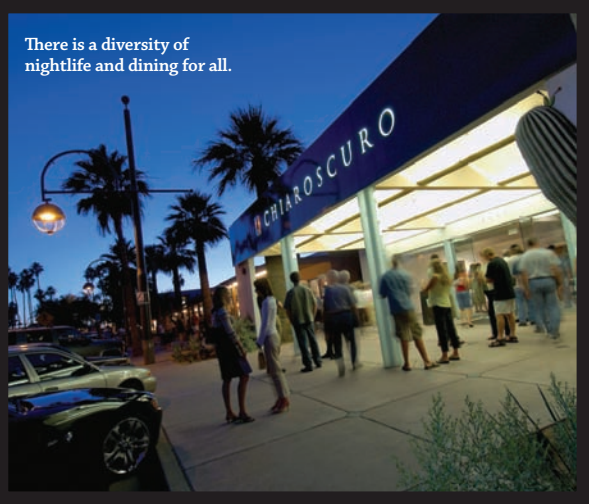
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A remote branch of the Grand Canyon inspires visitors from around the world.

With five distinct regions, dozens of national and state parks—including the Grand Canyon National Park—and hundreds of cities and towns, Arizona's landscape is as diverse as it is beautiful and is internationally renowned for its natural beauty with pleasant winters, varied recreational activities and diverse cultural opportunities. Taken together, these provide a quality of life in Arizona unsurpassed by any area of its size in the world, plus its lifestyle amenities attract and sustain today's technology-oriented workforce.

- *Arizona personal income tax structure is among the lowest in the nation, ranging from 3.3 percent to 5 percent.*
- *Extensive medical and hospital facilities including the world-class Mayo Clinic and Barrow Neurological Institute are located in Arizona.*
- *The state is home to the 2001 World champion Arizona Diamondbacks, NFL Football, NBA Basketball, NHL Hockey, NASCAR, professional tennis and rodeo events.*
- *Arizona has more than 325 golf courses and is host annually to the Tucson Open, the Phoenix Open, and the LPGA and Buy.com tournaments.*
- *Museums, ballet, opera, and concerts for all musical tastes complement our Native American and Spanish roots.*
- *Snow skiing, mountain biking, hiking, horseback riding, boating, rock climbing, rafting, camping, hunting and fishing are popular activities in the state.*
- *Six national forests, 26 national parks, 27 state parks, monuments, recreation areas, and historic sites are located in Arizona.*

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DID YOU KNOW?

INTERESTING FACTS ABOUT THE GREAT STATE OF ARIZONA

What makes Arizona unique? It's hard to even know where to begin. Here are a few of our favorite "fun facts" about the Grand Canyon State:

- It would take more than 4.8 million pennies to equal the amount of copper used on the roof of the Arizona Capitol building.
- Arizona has the largest percentage of land designated as Native American Tribal land in the United States.
- The Hopi village of Oraibi is the oldest Native American settlement in the United States. The village was built in 1100 and was discovered in 1540.
- Interstate 10 stretches 390 miles across Arizona.
- More hummingbird species can be found in Sierra Vista located in the southern portion of the state than in any other state, earning its title as "the Hummingbird Capital of the United States."
- South Mountain Preserve is the largest municipal park in the country.
- The only place in the United States where mail is still delivered by mule is in Havasupai, located at the bottom of the Grand Canyon.
- The world's largest antique, London Bridge, is located in Lake Havasu City. This is the only object or place in the United States that has World War II damage to it. (It was damaged in London prior to moving to Lake Havasu.)

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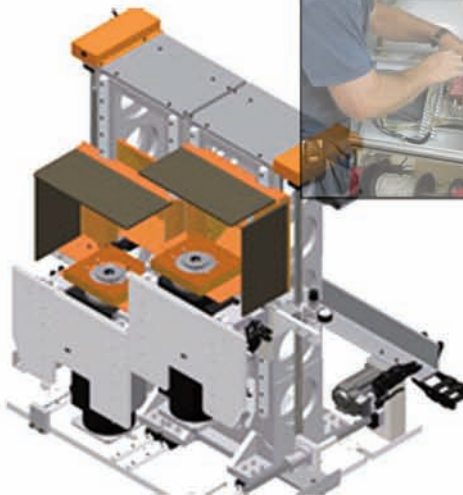
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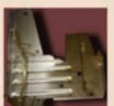
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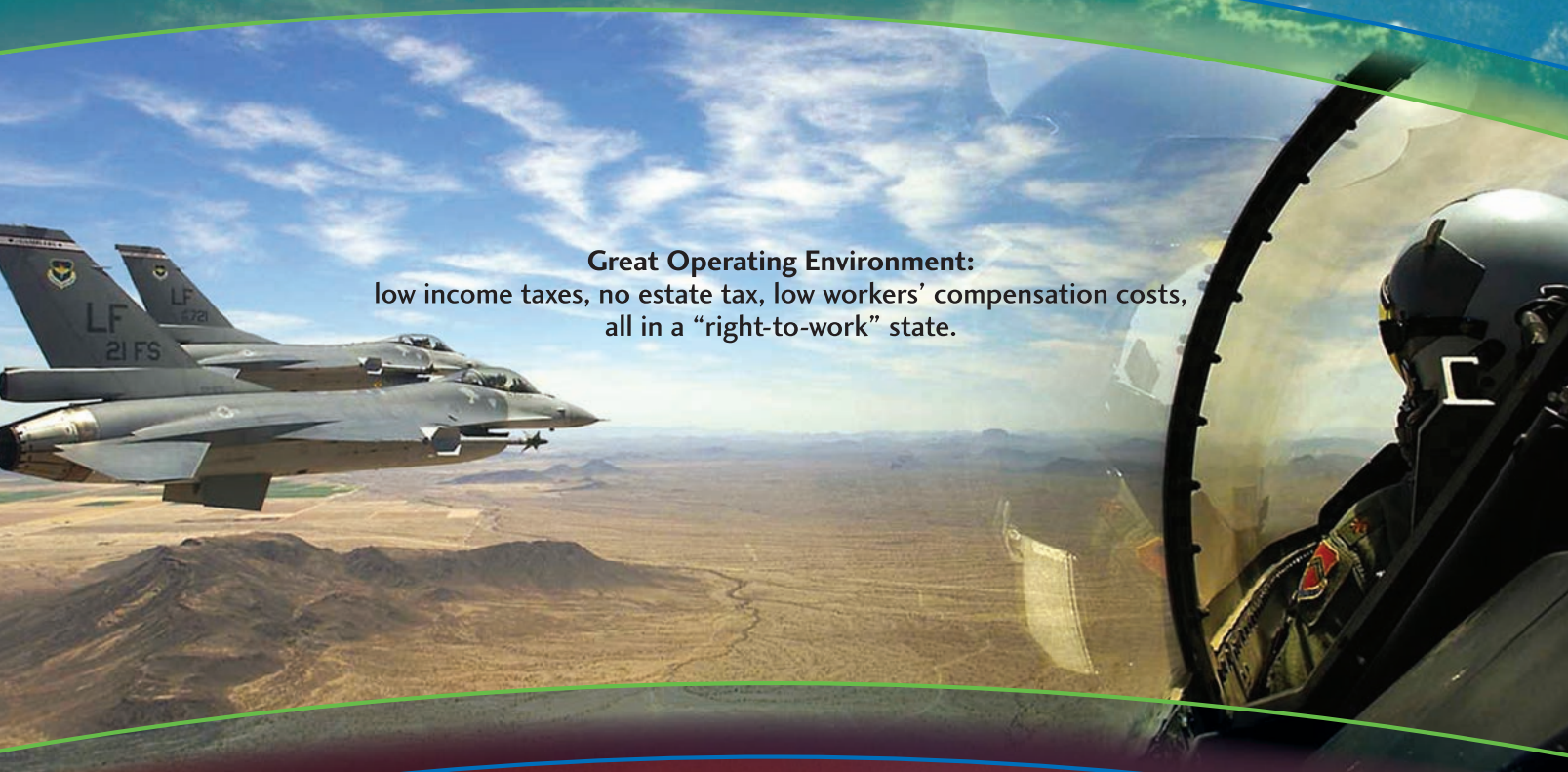
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