Test Site Naming Kicks Off Push for Unmanned Aircraft

By Charles Huettner and Brett Davis

In December 2013, The Federal Aviation Administration selected six public entities and set a course that will lead to the development of unmanned aircraft systems and the economic, environmental, safety and security benefits that will accompany this research. Congress mandated the test sites to conduct research into the certification and operational requirements required to safely integrate unmanned aircraft systems into the national airspace over the next several years.

Unmanned aircraft systems are emerging technologies that have the potential to transform the United States by providing wide-ranging economic, environmental, safety and security benefits. Now that the Federal Aviation Administration has released its list of six unmanned aircraft test sites, attention is moving to the economic impact unmanned vehicles and their related industry can bring to the states.

Each test site will focus on a specific area of unmanned aircraft systems integration, but the overall push is to generate enough data to allow them to fly safely alongside manned aircraft.

“Safety is our priority,” FAA Administrator Michael Huerta told members of the U.S. Committee on Transportation and Infrastructure in February 2014. “We need to address operational issues, such as ensuring that unmanned aircraft can detect and avoid other aircraft; and that unmanned systems operate safely if they lose the link to their pilot; and this is why developing additional research data from the test sites is so important.”

The sites were partly selected to provide a diverse array of environments and situations, giving the FAA better data from a variety of backgrounds. They are headed by the University of Alaska, State of Nevada, New York’s Griffiss International Airport, the North Dakota Department of Commerce, Texas A&M University–Corpus Christi and Virginia Polytechnic Institute and State University.

Economic Impact

Although safety is the watchword, the 25 states that competed for a test site also had economic development in mind. Test site applicants were required to submit economic development data to the FAA as part of the process.

“There’s no question that these are important businesses in the states that are selected,” Huerta said in a teleconference with reporters upon announcing the site locations.

Nevada, for instance, estimated it would gain thousands of jobs, paying about $62,000 each, for an estimated $2.5 billion in economic impact, with an estimated $125 million in annual state and local tax revenue. Based in New York and Massachusetts, the Northeast UAS Airspace Integration Research Alliance, NUAIR, is a regional alliance of more than 40 private industry, academic institutions and military assets and operations that worked to establish the FAA-designated test site at New York’s Griffiss International Airport for unmanned aircraft systems in the Northeast. NUAIR officials estimate that their alliance will help create 2,600 new jobs in their states, with an economic impact of $600 million by 2017.

The Association for Unmanned Vehicle Systems International, the world’s largest nonprofit devoted to advancing unmanned systems and robotics, has estimated the commercial market for unmanned aircraft will total more than $13.6 billion in the first three years after integration, with a steady growth beyond that. The association estimates the unmanned systems commercial market will create more than 70,000 high-paying jobs in the first three years, with new job creation estimated at more than 100,000 within the first decade.

The bulk of the market for commercial use will be in the agriculture and public safety areas, according to the report, “The Economic Impact of Unmanned Aircraft Systems Integration in the United States.” In fact, agriculture and public safety uses are estimated to make up 90 percent of the known commercial markets, with agriculture making up the bulk of that.

Given the previous experience of some of the test sites, it’s expected that they will generate some data about how unmanned aircraft systems could be useful on farms. The Aerospace States Associa-
tion’s 2014 STEM initiative, “The Real World Design Challenge,” is challenging hundreds of high school students to design systems for agricultural use and provide information for the FAA’s regulatory initiatives.

Test Site Environments

The FAA noted that North Dakota is the only site to offer a test range in the temperate continental climate zone. That site will develop airworthiness data and validate reliable link technology. The FAA’s Huerta mentioned lost-link reactions as being one area that needs to be considered.

The North Dakota Chamber of Commerce said the state already has invested more than $14 million to advance unmanned aircraft system research and development, and the state legislative assembly has appropriated $5 million to support the test site. In late April, it became the first test site to be granted a certificate of authorization from the FAA to begin its test site work. North Dakota officials began flying a Draganflyer X4ES small UAS in early May.

The University of Alaska Fairbanks will head up that state’s testing, building on the existing work of the Alaska Center for Unmanned Aircraft Systems Integration. Alaska’s effort will include partners in Oregon and Hawaii, which together will offer 13 test ranges as part of the Pan-Pacific UAS Test Range Complex.

“Alaska, Oregon and Hawaii offer exceptional climatic and geographic diversity, lightly populated airspace and overwater test opportunities that can support the majority of FAA needs,” Ro Bailey, deputy director of the Alaska Center for Unmanned Aircraft Systems Integration and the intended Pan-Pacific UAS Test Range Complex director, said in a statement from the university.

In early May, the FAA announced that Alaska’s range is the second to be ready for testing, and granted it a certificate of authorization. The Canadian company Aeryon Labs plans to fly its Aeryon Scout small UAS for animal surveys near Fairbanks.

As part of its test site work, Nevada will focus on unmanned aircraft systems standards and operations, as well as operator standards and certification requirements.

“Being selected as one of six sites for (unmanned aerial vehicles’) development in the country is a historic moment for Nevada,” Gov. Brian Sandoval said in a statement. “With the climate and air space of Nevada, we are uniquely equipped to help expand the development of (unmanned aerial vehicles). We have also partnered with private industry and academia to establish the curriculum necessary to create the (unmanned aircraft systems) civilian workforce of the future in Nevada.”

The state’s team includes the Nevada System of Higher Education, the Nevada National Guard, Bowhead Systems, Navigator Development and Drone America, operating across three test ranges and four test sites.

New York will help in “researching the complexities of integrating (unmanned aircraft systems) into the congested Northeast airspace.” The site will be spearheaded by the Northeast UAS Airspace Integration Alliance, which is made up of universities and public and private entities in New York and Massachusetts. Test sites will be based at Griffiss International Airport in Rome, N.Y., and Joint Base Cape Cod in Massachusetts.

In January 2014, the Northeast UAS Airspace Integration Alliance and state and federal officials—including U.S. Sen. Charles Schumer of New York—announced the alliance had lined up its first customer, New York City-based Flyterra, the U.S. and Canadian reseller of unmanned aircraft systems built by French-based Delair-Tech.

Texas A&M heads 11 test ranges as part of its site, with plans to develop system safety requirements for vehicles and operators. The school’s Corpus Christi campus has been doing unmanned aircraft system research for about two years, using the aircraft for a variety of tasks, including mapping sea grass, detecting oil spills and wildfire hot spots, monitoring hurricanes and even counting cattle herds for ranchers.

“This designation will help make south Texas and the Gulf Coast the home of future generations of unmanned aerial systems,” said Richard Somers, vice president of Southwest Research Institutes’ Aerospace Electronics, Systems Engineering and Training Division. “Good flying weather year-round, varied terrain and the possibility of overwater testing above the Gulf of Mexico add up to an attractive locale for developing new designs and new capabilities.”

The Southwest Research Institute is one of the partners in the test site, along with the University of Texas at Arlington Research Institute, private sector partner Camber Corp. and other research institutions and private companies.

Virginia Tech plans to conduct unmanned aircraft systems’ failure mode testing, offering test site range locations in both Virginia and New Jersey, as well as a planned partnership with the University of Maryland.
Virginia and New Jersey’s Rutgers University submitted a joint proposal, led by Virginia Tech, as the Mid-Atlantic Aviation Partnership. The University of Maryland had submitted a separate proposal, but the groups agreed to work together if either or both proposals were accepted.

“Separately the team members have flown unmanned aircraft systems for thousands of hours, and now we have joined together to conduct unmanned aircraft systems research, development, and test and evaluation activities,” said Jon Greene, interim director of the partnership.

Virginia will award more than $2.6 million over three years to Virginia Tech for the test site work, moving the Mid-Atlantic Partnership from a volunteer organization to “a fully functional and revenue-producing organization capable of competitively analyzing and testing unmanned aircraft systems for industry and government,” a university press release said.

Privacy Concerns
In addition to providing data on helping integrate unmanned aircraft systems into the National Airspace System, the test sites also will help the FAA negotiate the thorny issue of privacy, a concern that has led some areas around the nation to ban or severely limit the use of unmanned aircrafts.

The FAA established requirements for each test site to help protect privacy. They were developed with public input and the final requirements were published in the Federal Register in November 2013. Test site operators will be required to comply with federal, state and local laws protecting an individual’s right to privacy, have publicly available privacy policies and a written plan for data use and retention, and conduct an annual review of privacy practices that allows for public comment.

Huerta said the testing sites also will be required to develop privacy policies for their use of unmanned aircraft system and test site users will need to have a written plan outlining their retention of testing data.

Privacy concerns have been driving some efforts in states to severely limit, and sometimes ban outright, the use of unmanned aircraft. Some efforts have even taken place in the states that will be participating in the test sites.

For instance, New Jersey lawmakers overwhelmingly passed legislation banning law enforcement agencies from flying an unmanned aircraft without a warrant, except under special circumstances or with the written consent of the person or property owner being observed. Gov. Chris Christie used a pocket veto to kill the measure, even though it had passed the New Jersey House 76-1 and the state Senate 34-2.

Nine states passed measures in 2013 to restrict the use of unmanned aircraft and nine others have reintroduced restrictions for the 2014 session, including Georgia, Kentucky, Maryland (a test site state), Missouri, New Hampshire, Oklahoma, Utah, Washington and New Jersey again. To help states address privacy concerns, the Aerospace States Association in partnership with The Council of State Governments and the National Conference of State Legislatures has developed six points that states should consider if they should choose to initiate privacy legislation:

1. Warrants: States may consider requiring a warrant for government surveillance of an individual or their property where the individual is specifically targeted for surveillance in advance without their permission. All other observation activities should not require a warrant, to the extent allowed under Supreme Court rulings. Additionally, if there is not a specific person identified for surveillance in advance, it is generally not possible to obtain a warrant. Requiring one would eliminate UAS benefits, but can be addressed per recommendation number two, below.

2. Data Concerns: Some are worried about government use of data derived from warrantless observations. States may consider addressing this by prohibiting the repurposing of data collected from government use of UAS in warrantless observation unless a warrant allows the repurposing.

3. States may consider prohibiting commercial UAS and model aircraft flights from tracking specific, identifiable individuals without their consent.

4. States can consider prohibiting weapons to be carried by any UAS in commercial airspace.

5. States may consider endorsing the International Association of Chiefs of Police Aviation Committee (IACP) “Recommended Guidelines for the use of Unmanned Aircraft.” These guidelines define UAS and provide guidance for community engagement, system requirements, operational procedures, and image retention for UAS operations by law enforcement organizations.

6. States may consider emphasizing that the FAA regulates commercial UAS, and that they and model aircraft operations should be operated in a manner not to present a nuisance to people or property.
Beyond Agriculture

Beyond agriculture, the test sites—and other efforts separate from them—are expected to yield data on a variety of uses for unmanned aircraft for everything from pipeline inspection to search and rescue to real estate.

NASA has been flying two former military Global Hawk unmanned aircraft—including the first one built—to fly around and over hurricanes to study their formation and aid in their prediction. The flights have been taking place from both California and Maryland.

Texas A&M is home to the Center for Robot-Assisted Search and Rescue, which uses robotic systems of all types, including aerial vehicles, to help in post-disaster environments. Teams from the group have been deployed all over the world to aid and consult in disaster relief, including in the wake of the Fukushima Dai-ichi nuclear disaster in Japan.

In Oregon, the Department of Fish and Wildlife and Embry-Riddle Aeronautical University have tested small unmanned aircraft that could be used to monitor wildlife, including cormorants on the state’s rugged coastline.

Even in states that did not win a test site, officials say they plan to continue their work on unmanned aircraft. Marshall Wright, director of the aerospace and defense cluster at the Utah Governor’s Office of Economic Development, said his state intends to continue to grow its unmanned systems industry.

Although the full integration of unmanned aircraft into the National Airspace System won’t be achieved by the end of September 2015 as called for in the FAA’s recent reauthorization bill, Congress is continuing to apply pressure to the agency to get it done.

In late December 2013, Congress approved the fiscal 2014 national defense authorization bill, which calls for the FAA, NASA and the Department of Defense to report to Congress by the middle of July 2014 on the work being done at the unmanned aircraft system test sites, including the progress being made on sense-and-avoid technology and an assessment as to how well the agencies are sharing data. The goal is to pressure the FAA to better leverage the work the military and NASA have done with unmanned aircraft.

Many states, including those with test sites and those without, are waiting to help make that come true.

About the Authors

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About ASA. The Aerospace States Association is a bipartisan organization representing the grass roots of American aerospace and aviation. It is a 501(c)(3) scientific and educational organization of the lieutenant governors, governor-appointed delegates and associate members from the aerospace industry, academia and nonprofit organizations. ASA was formed in 1993 to promote a state-based perspective in federal aerospace policy development and to support state aerospace initiatives.

Special thanks to the Association for Unmanned Vehicle Systems International for their assistance and research in developing this article.