



**Committee on Transportation and Infrastructure  
U.S. House of Representatives**

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**Washington, DC 20515**

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March 7, 2014

**SUMMARY OF SUBJECT MATTER**

**TO:** Members, Subcommittee on Aviation  
**FROM:** Staff, Subcommittee on Aviation  
**RE:** Subcommittee Field Hearing on “Modernizing the Aviation System: Leveraging the Assets of the FAA’s William J. Hughes Technical Center”

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**PURPOSE**

The Subcommittee on Aviation will meet on Tuesday, March 11, 2014, at 1:30 p.m. at the Federal Aviation Administration’s (FAA) William J. Hughes Technical Center (Technical Center) located at the Atlantic City International Airport (ACY) in Egg Harbor Township, New Jersey. The Subcommittee will receive testimony from the FAA and industry experts to learn about the resources of the Technical Center and how they can best be utilized to move NextGen forward. As part of the transition to NextGen, the FAA must safely integrate unmanned aircraft systems (UAS) into the national airspace system; therefore the Subcommittee will also receive testimony on that subject.

**BACKGROUND**

*History and Overview of the William J. Hughes Technical Center*

On July 1, 1958, the Federal Airways Modernization Board established the National Aviation Facilities Experimental Center (NAFEC) near Atlantic City, New Jersey. On May 29, 1980, the FAA changed the name from NAFEC to the FAA Technical Center, and on May 6, 1996, it was renamed the William J. Hughes Technical Center.<sup>1</sup>

The Technical Center serves as the core FAA research and development facility for modernizing our air traffic control (ATC) system, including the Next Generation Air

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<sup>1</sup> [http://www.faa.gov/about/office\\_org/headquarters\\_offices/ang/offices/tc/history/](http://www.faa.gov/about/office_org/headquarters_offices/ang/offices/tc/history/)

Transportation System (NextGen), and for advancing programs to enhance aviation safety. In addition to research and development work, the Technical Center provides continuous operational support to the FAA's field facilities across the country. Further, the Technical Center houses several laboratories, such as air traffic control and simulation facilities, the world's largest full-scale aviation fire test facility, the National Airport Pavement Test Facility, and a fleet of specially-instrumented in-flight testing aircraft.<sup>2</sup>

With respect to the areas of ATC modernization and aviation safety work, the Technical Center has a long track record of demonstrated expertise. The Technical Center was involved in some of the earliest ATC projects, including ATC automation, the first operational testing of an en route<sup>3</sup> system, and the first ATC tower cab mockup to test controller work areas and do airport observations. More recently, the Technical Center was instrumental in the research and development of major NextGen programs, including En Route Automation Modernization (ERAM), Terminal Area Modernization Automation, Data Communications, and Automatic Dependent Surveillance-Broadcast, and it continues to play an integral role in their testing and validation.

### *NextGen*

More than a decade ago, Congress, the federal government, and aviation industry stakeholders began working on a program to transform our World War II-era ATC system into a modern air traffic management system capable of meeting future air traffic demands. Government and aviation industry leaders recognized that without modernizing our ATC system, the United States would be hard-pressed to remain global leaders in aviation. The concept was simple: create a more efficient, reliable, safe, and environmentally-friendly air transportation using 21<sup>st</sup> Century technologies.

While the FAA has made progress in its efforts to implement NextGen, the agency has experienced several setbacks, including cost overruns and delays to foundational programs. These setbacks are documented in detail in reports published by the Department of Transportation, Office of Inspector General, and the Government Accountability Office, Comptroller General. Both the Inspector General and Comptroller General have highlighted issues such as a failure to involve and receive input from all stakeholders (such as air traffic controllers) and technical issues with modernization projects that are needed to implement NextGen capabilities and deliver benefits to users.

Given the significance of a successful NextGen program, it is important that government and industry stakeholders are using every available resource, such as the world-class laboratories and resources of the William J. Hughes Technical Center, to identify problems and develop solutions.

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<sup>2</sup> Id.

<sup>3</sup> *Air Route Traffic Control Centers* control aircraft in high-altitude en route airspace (i.e., in transit and during approach to some airports, generally controlling the airspace around and above terminal areas).

## *NextGen Integration and Evaluation Capability*

The Technical Center houses the NextGen Integration and Evaluation Capability (NIEC), which is the FAA's research platform to explore, integrate, and evaluate NextGen concepts through simulation activities. The NIEC leverages existing NAS operational systems to create an environment that can be tailored for NextGen research as well as test and evaluation. It also has the ability to provide a combined environment of legacy systems with NextGen technologies and capabilities, enabling the NIEC to support the transition to NextGen.<sup>4</sup>

The NIEC contains an air traffic suite, a research cockpit simulator, an unmanned aircraft system suite, a simulated tower, and a multi-purpose area. The multi-purpose area can be used to display weather and traffic management data, operate as a simulation monitoring station, or simulate an airline operations center. These assets can also be configured to replicate a desired traffic scenario, address emergent research questions, and develop solutions for problems identified in the field.

For example, when ERAM – a major NextGen enabling software program – was being deployed in en route air traffic facilities, several site-specific problems were discovered. These problems were relayed to the Technical Center where teams of FAA and industry professionals would assemble and use the NIEC to troubleshoot in a simulated environment. When solutions were developed, they were transmitted back to the originating facility and implemented.

## *UAS*

The safe integration of unmanned aircraft systems into the national airspace system presents significant challenges. The *FAA Modernization and Reform Act*<sup>5</sup> required the FAA to establish six test ranges<sup>6</sup> to address these issues. Each test range is intended to be unique and, their operation will be focused on specific research and development areas, such as developing certification standards for UAS categories, integrating UAS with NextGen technologies, and testing, identifying, and evaluating operational and technical risks.

Once operational, the test ranges will collect an enormous amount of data that will ultimately be used to safely integrate UAS into the NAS. However, the data must first be analyzed and validated by the FAA. The Technical Center is expected to lead this effort.

## *Role of the Technical Center*

The Technical Center is well-equipped to assist the FAA in meeting the challenges of modernizing our ATC system. It is supported by roughly 1,500 FAA employees and 1,500 FAA contractors and houses a unique network of aviation laboratories. This hearing will examine the Technical Center's historical and ongoing role in the development and progression of NextGen,

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<sup>4</sup> FAA Handout, NextGen Integration and Evaluation Capability

<sup>5</sup> P.L. 112-95

<sup>6</sup> The FAA announced the selection of the test ranges on December 30, 2013. They include the University of Alaska; State of Nevada; New York Griffiss International Airport; North Dakota Department of Commerce; Texas A&M University-Corpus Christi, and; Virginia Polytechnic Institute and State University.

as well as highlight potentially underutilized resources and identify additional ways the Technical Center can help improve the implementation of NextGen and the safe integration of UAS.

### **WITNESS LIST**

#### **Panel I**

The Honorable Michael Whitaker  
Deputy Administrator and Chief NextGen Officer  
Federal Aviation Administration

Mr. Dennis Filler  
Director  
William J. Hughes Technical Center  
Federal Aviation Administration

#### **Panel II**

Ms. Cynthia Castillo  
President and CEO  
CSSI, Inc.

Mr. Melvin Davis  
National Representative for NextGen  
National Air Traffic Controllers Association

Mr. Pete Dumont  
President and CEO  
Air Traffic Control Association

Mr. Ben Gielow  
General Counsel and Senior Government Relations Manager  
Association for Unmanned Vehicle Systems International