

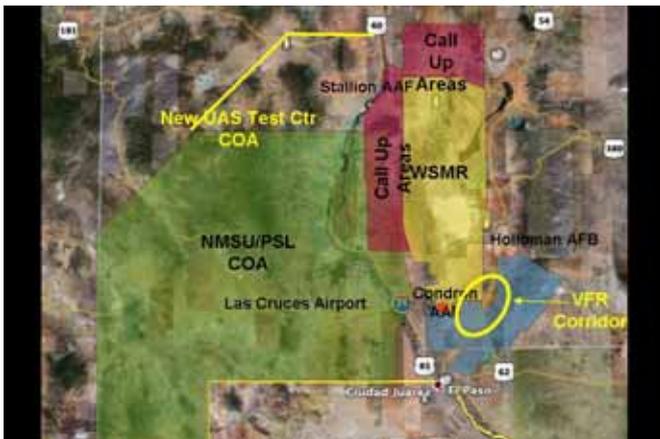
CONTRIBUTING ORGANIZATIONS

NMSU-PSL-TAAC

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New Mexico State University Physical Science Laboratory (NMSU/PSL) has operated the Unmanned Aircraft Systems Technical Analysis and Applications Center (TAAC) since 1999. It was formed to promote the safe integration of Unmanned Aircraft Systems (UAS) into the National Airspace System (NAS).

The Federal Aviation Administration (FAA) signed a Cooperative Research and Development Agreement (CRDA) in February with NMSU, which formalized the establishment of a one-of-a-kind Flight Test Center (FTC), which is headquartered at the Las Cruces International Airport in New Mexico. The CRDA takes advantage of southern New Mexico's unique airspace conditions and NMSU's considerable research, development, testing, and evaluation experience with UAS. The FTC will be the facility where government and private research, development, and testing of UAS will be conducted.



The Flight Test Center enjoys nearly 12,000 square miles of low-density airspace over sparsely populated land.

Research and development is expected to be done in such areas as establishing standard UAS regulations as well as providing new technology for homeland security, agriculture, defense, and science operations to name a few areas. Currently, there are no standards for routine deployment of UAS in the NAS. There are only two ways for a UAS to gain access to the NAS: the FAA can either grant an experimental airworthiness certificate or issue a certificate of authorization (COA). NMSU's COA is expected to be expanded to include additional airspace and operating airports in southern New Mexico.

Nearly all of the property located beneath the new center's airspace is owned by either the state or federal government, or the university, itself. Southern New Mexico's consistent climate is conducive to year-round testing with more than 340 excellent flying days per year.

Civil UAS developers and some potential non-military governmental clients for UAS are very limited in what UAS flight activities they can conduct. This situation exists due to the lack of available restricted airspace and the fact that most civil UAS users for commercial and non-



Operator Requirements & Airworthiness are 2 Areas Needing Empirical Data

military applications cannot operate within these restricted areas. Even some military missions encounter this problem. An FAA-authorized FTC will address the need to provide UAS proponents with the ability to conduct research and development and operate UAS more readily in the NAS.

The objective of the CRDA is to develop a UAS FTC that will support the acceleration of the safe and routine operation of UAS in the NAS. This Center will provide industry, DoD, and other federal users access to the NAS. The plan is for the FAA to authorize NMSU/PSL to implement and operate the FTC; FAA will provide oversight of the operation; and FAA will receive periodic test data from the operations of the FTC to support the FAA's development of the regulatory body needed for UAS. This test data will be data on actual UAS.

Another exciting development with TAAC is the completion of a hangar at the Las Cruces Airport that is for the exclusive use of the UAS program. The hangar's external dimensions are 150 ft. deep by 100 ft. wide, with clear span interior. Internal dimensions are a minimum of a 135

TAAC Hangar for UAS Program Nearing Completion





ft. internal clearance in width, 19 ft. internal clearance in height on sides, 30 ft. internal clearance in height at center. In addition to the hangar and office and developmental lab space, NMSU also is installing an engine test cell for UAS engines.

The TAAC UAS engine test cell will collect data for the purpose of defining operating characteristics of UAS engines, to provide data for establishing maintenance procedures, and to support regulatory development for UAS engines. Specific measurements include:

- Overall performance characteristics of engines: power output (horsepower curve); torque output and torque curve; brake-specific fuel consumption; oil consumption; and thermodynamic parameters;
- Reliability: component reliability and failure rates (mechanical and electrical); overall reliability and failure rates (mechanical and electrical); and time dependent

- variables (e.g., spark plug, cooling efficiency aging);
- Electromagnetic component compatibility;
- All of the above under controlled conditions of temperature, humidity, and atmospheric pressure to simulated altitudes.

Also, an anechoic chamber is planned for installation adjacent to the NMSU hangar and to be operationally capable by mid year 2008 for antennae measurements. Other supporting infrastructure for the TAAC aerospace and Flight Test Center programs is also planned at the Las Cruces Airport.

Finally, this year's UAS TAAC conference will be held December 9 through 11, 2008, at the Tamaya Hyatt Regency Resort at the Santa Ana Pueblo, New Mexico. This is the tenth year of the conference so special events are planned to make it even more interesting and exciting. We hope you will plan to attend.

For more information about TAAC and the Flight Test Center, please contact Stephen B. Hottman at: Tel.: 1-505-646.92.02 shottman@psl.nmsu.edu or visit www.psl.nmsu.edu/uav.

