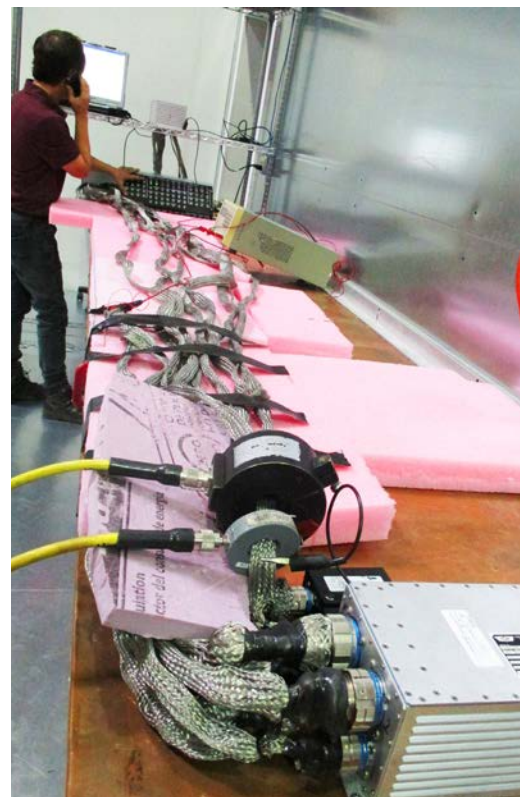


# Environmental Testing

Explosive atmosphere chamber at NTS Plano.



Byron troubleshooting a lightning test for the H396 DAU.

Recently, Byron Jones, Field Service Technician, has made National Technical Systems (NTS) in Plano, TX his secondary home. Working closely with engineers Nhan Pham and Nathan Clark, he has been conducting environmental tests for our two new Data Acquisition Units (DAUs) created for launch customer MD Helicopters.

With a large network of test laboratories across the country, NTS provides testing and certification services for many aerospace companies. “We can do some basic testing at Howell, and we have done some temperature tests ourselves to save money, but we are not equipped with all the expensive equipment required and they have everything,” Byron says.

While environmental testing is necessary for every product Howell manufactures, different approaches are used depending on the product and requirements:

- The Society of Automotive Engineers (SAE) decides what types of tests are required and set the standards for certification.
- The Federal Aviation Administration (FAA) enforces testing standards set by the SAE.
- Every customer has a different set of required tests depending upon the specific airframe and where the product will be located.

In this case, the Howell DAU will meet DO-160G, which helps determine if avionics systems will perform reliably in an airborne environment.

There are several types of environmental testing: Electromagnetic Interference (EMI), as well as the different types of atmospheric tests such as temperature, altitude, humidity, vibration, explosive atmosphere, magnetic effect, voltage spike and induced lightning among many others. According to Byron, “These tests are a critical part of the design process. They make certain that our units are functioning exactly the way they should be, or they can reveal that certain design elements need to be changed.”

An environmental test always begins with an Environmental Test Plan (ETP) initiated by Engineering and documented by Technical Publications. The ETP gives specific details of everything that should happen during the testing process. From there, every test is performed differently. Byron states, “Each test requires a different cable set-up. One test might want a 1 meter cable and one might need it to be 3 meters. Some tests require the cables to be shielded and others require them to be un-shielded, so I am constantly modifying cables.”

Environmental testing is inherently expensive, exhaustive and time-consuming, but for this project, MD Helicopters requested more rigorous test requirements. Because of the function and importance of the unit, the DAU will need to meet a higher safety classification. Mitch Boeshart, Director of Engineering, explains that the higher standard of testing enables us to increase the reliability of our product, “We have to be able to manufacture reliability into our product by making sure we adhere to ESD (Electrostatic Discharge) protocol. A lack of ESD decreases reliability and weakens our product. We test as much as we can to make sure failures are not in the design.”

Howell has already completed environmental testing for the H397 DAU. Flight testing is expected to begin at the end of October. Mitch anticipates testing for the H396 DAU will be completed relatively soon, and we can welcome Byron back home.



Reverberation chamber at NTS Plano.