

“Ideas-in-Flight”
Intern: Nelson Yanes
Video Transcript

“Hi there! My name is Nelson Yanes. I am from Hyattsville, Maryland, and I am a senior at the University of Maryland, College Park, where I am pursuing a Bachelor of Science Degree in Aerospace Engineering. This summer, I am an undergraduate intern at NASA’s Glenn Research Center as part of the Aeronautics Scholarship Program. I’m currently working at the Acoustics Branch, performing interesting research with my mentor, Dr. Ed Envia.”

“My project at NASA is to develop an empirical model for fan broadband noise. If you ever find yourself near an airport, chances are, you will be bothered by the loud noise emanating from aircraft engines. As it turns out, one of the largest sources of engine noise is from the large fan at the front of the engine.”

“My responsibility in the project is to analyze large databases of acoustic data for a variety of fans that have been tested at NASA’s Nine-by-Fifteen Foot Low-Speed Wind Tunnel. Using analytical techniques developed at the Acoustics Branch, I have developed a tool for predicting broadband noise as a function of frequency for a given fan at any microphone position and RPM. My ultimate goal is to develop a robust model that can be used to predict broadband noise for any fan given its operating conditions.”

“This is actually my first educational experience outside of my home state of Maryland. Before I was a recipient of the 2012 Aeronautics Scholarship, I never had the opportunity to study away from home. However, I am proud to have NASA give me this amazing opportunity to work on useful research in Cleveland, Ohio. I am able to work with actual professionals and experts in the field. Some of the people I work with spent their entire lives dedicated to understanding engine acoustics. Also, everybody at Glenn is approachable and treats interns with open arms. You can walk up to any scientist and they will show you what they are working on. The friendliness at NASA Glenn is perhaps one of my favorite qualities of the center.”

“The engine research I am conducting is actually part of a larger effort at NASA to develop the next generation of quiet and efficient subsonic aircraft. Future concepts involve a blended wing-body aircraft, which incorporates a distributed propulsion system, consisting of a large array of engines. Unfortunately, it is likely that this concept will experience the same fan noise problem found in current aircraft engines. This is why it is important that we understand the physics behind fan noise, so that concepts like this can really come to life.”

“My experience at NASA Glenn has really changed my life. The knowledge I gained here will be valuable when I enter graduate school. I look forward to continue my relationship with NASA in the nearby future. Thank you.”