TATRC TIMES

July 2019 • Volume 5, Qtr. 1

USAARL Trains TATRC on Using an Environmental Factors Data Acquisition System

Ms. Rebecca Lee (left), MISL Project Manager aboard the UH-60 during EFDAS training in Fort Rucker, AL.

Can Unmanned Vehicles be made safe for evacuating combat casualties from hostile environments? That is the question which prompted ongoing collaboration between TATRC and the U.S. Army Aeromedical Research Laboratory (USAARL) in research aimed at developing methods for measuring environmental factors that could affect patient safety onboard unmanned ground and air systems. Last Fall, Mr. Nathan Fisher and Ms. Rebecca Lee of the Medical Intelligent Systems Lab traveled to Fort Rucker, Alabama to receive training on the Environmental Factors Data Acquisition System (EFDAS). This system was developed under a JPC-6 funded research collaboration with TATRC entitled: "Emergency Medical Resupply and Enroute Care Unmanned Air System (UAS) Research Platform."

This project seeks to investigate the use of emerging UAS platforms to augment traditional means of providing emergency medical resupply and casualty evacuation (CASEVAC) in austere environments. Safe patient transport onboard UAS is critical to this concept, and requires systematic analysis of in-flight conditions relevant to patient safety. The EFDAS is a research payload that would enable data acquisition of in-flight conditions of the interior cargo area of the aircraft pertinent to future medical missions focused on utilizing unmanned systems, to include environmental effects important during patient transport (e.g. peak acceleration, temperature, barometric pressure, shock and vibration).

In addition to the training, the EFDAS was flown on a manned UH-60 to validate the performance of the EFDAS and to collect baseline data from the UH-60 for future comparison studies on UAS platforms. After the system is validated, TATRC will lead the integration, testing, and demonstration of the DAS-equipped DP-14 in the Spring of 2019 to characterize the in-flight conditions of the multi-purpose UAS platform.

"The EFDAS provides a key capability to characterize the safety of emerging unmanned transport vehicles for CASEVAC missions, both on the ground and in the air," as stated by Mr. Nathan Fisher, Principal Investigator for this effort. "The utility of the EFDAS system will extend beyond the objectives of this project and will act as an enabler to future R&D efforts supporting the Medical Robotics and Autonomous Systems S&T Task Area." For example, data collected from the EFDAS can inform the design of systems that will dynamically alter the flight profile of unmanned vehicles to ensure the patient safety when performing CASEVAC.

Addressing these important patient safety concerns early on will ensure that when sufficiently large UAS platforms are called into service for CASEVAC in future operations, they will do so under the safest possible conditions.