50 Years After Vietnam, Hueys Fly by Themselves

Joined by a number of key stakeholders from all branches of service on 25 - 26 October at the "Flying Circus" in Bealeton, VA, members of TATRC's Operational Telemedicine Lab witnessed on the first day, what was likely the first public, totally autonomous flight of a Vietnam era UH-1 Huey aircraft equipped with the Office of Naval Research (ONR) Autonomous Aerial Cargo Utility System (AACUS) prototype. That Vertical Take-off and Lift (VTOL) Unmanned Aerial System (UAS) demonstration was followed the next day by TATRC's SBIR partner, Kutta Technologies, which leveraged the ONR AACUS system and same UH-1 aircraft to demonstrate the potential for combat medics on the ground to issue commands to an approaching or departing emergency medical resupply UAS, and then monitor patients onboard that same aircraft during a simulated UAS Casualty Evacuation (CASEVAC) mission.

Kutta Technologies demonstrated a fully autonomous Huey aircraft prototype.

Kutta Technologies successfully demonstrated their Phase II SBIR research in developing two novel methods of providing situational awareness, limited command & control, and telemedicine data exchange, allowing a medic in the field to effectively interact with an Autonomous UAS for medical missions (medical resupply and CASEVAC) for situations in which traditional MEDEVAC assets are unavailable or denied access. Kutta's technology was integrated with the ONR AACUS and Aurora's Autonomous AEH-1 Huey to demonstrate medical missions using a Nett Warrior handheld device and radio representative of fielded handheld tactical radios (PRC-152). By leveraging already fielded and familiar platforms, a combat medic, with little or no training in the operation of unmanned vehicles, is able to interact at a task or goal level with a UAS that has been assigned to a CASEVAC mission in a situation in which traditional manned medical evacuation assets are not available. In addition to integrating command and control capabilities, the demonstration also involved transmitting telemetry from the aircraft using the platform's native radios to an Android EUD on the ground to upload patient data and records to AHLTA-T. Altogether, the event simulated a realistic CASEVAC scenario where a medic could call, land, and wave off a UAS for a medical evacuation while maintaining situational awareness of the patient's condition while they're in transport.

For the 2-day event, the coordinators obtained a special FAA clearance to perform a non-line of sight UAS demonstration where the vehicle flew 2 mile trips between the airfield and a nearby civilian airport. The vehicle was able to fly autonomously using an onboard sensor suite that enabled it to detect and avoid obstacles and evaluate the landing zone and onboard mission, route, and path planning capabilities to execute missions. The sensor suite and autonomy capability, known as the Tactical Aerial Logistics System (TALOS), is a platform agnostic autonomy kit that has been demonstrated on other aircraft including the Boeing H-6U Unmanned Little Bird, and three different Bell 206 aircraft and is a successor of previous TATRC-funded research.

TATRC's Robotics Project Manager, Mr. Nathan Fisher commented that "AACUS offers next-generation vehicle autonomy for VTOL UAS, allowing UAS to bring multi-mission utility to the future battlespace. Today we have demonstrated that medics can effectively interact with these next-generation UAS during medical missions through an intuitive interface application. This provides an opportunity for future UAS to augment traditional medical assets in a time of need."

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Attendees at the Phase II SBIR demonstration of Kutta Technologies in Bealeton, VA.