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RE: Airworthiness Statement for the YellowTail Phase I UAS

The purpose of this memo is to document the certification process used to certify the airworthiness of the YellowTail Phase I unmanned air system (UAS) outlined in this COA application. These UAS are used solely for research purposes and will be operated at the existing Jackson, Michigan Academy of Model Aeronautics (AMA) field.

Each YellowTail Phase I platform is carefully inspected for airworthiness at multiple stages during the assembly of the aircraft, immediately before flight, and immediately following flight. The YellowTail Phase I airframe is an experimental platform designed and built at the University of Michigan by the SolarBubbles student team. The team is advised by multiple Aerospace Engineering faculty members, including myself, with experience as an AMA hobbyist and ASEL private pilot. An R/C modeler with over 50 years of experience is responsible for inspecting and approving all phases of the design, construction, and flight operations process. All materials and components are carefully inspected upon receipt. Structural components and assemblies are manufactured by upper-level students trained through an apprenticeship program in which senior undergraduates and experienced graduate students formally train the next-generation of freshman/sophomore students in composite structure manufacturing, assembly, and laboratory-based testing. Each component and assembly is carefully inspected for integrity and quality of construction by our experienced R/C modeler before final assembly into the airframe. Each servo is individually tested for performance and range of motion, and the pushrods and control surfaces are individually tested and calibrated in the laboratory prior to and during installation. Propellers are balanced to performance standards and each engine is broken-in on the ground with a minimum of four full battery cycles. Immediately prior to launch, each YellowTail Phase I platform goes through a detailed pre-flight check, which includes a detailed airworthiness inspection of control surfaces, battery energy and function, motor test, and a radio check for range and potential interference issues. After landing, logs are maintained for each airframe including flight times, repairs, and performance and structural evaluations. Associated documents in this COA application further describe the hazard analysis, safety guidelines, and standard operating procedures for our YellowTail Phase I UAS.

Sincerely,

Ella M. Atkins  
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Certified Private Pilot, ASEL  
AMA member and hobbyist