

T1 Aircraft Description

The Systems Engineering Directorate (SED) of the NASA Langley Research Center desires to fly a generic Unmanned Aircraft Systems (UAS) aircraft at the 31VA Aberdeen Airfield of Smithfield, Virginia. This project activity is provided to the NASA Aviation Safety Program (AvSP) Office request for developing an Airborne Subscale Transport Aircraft Research (AirSTAR) generic transport aircraft test bed for conducting experiments. AirSTAR UAS will be flown at Aberdeen Airfield in support of the Control Upset Prevention and Recovery (CUPR) element of the AvSP. The typical flight agenda at 31VA Aberdeen Airfield will consist of takeoff, traffic pattern maneuvers, and landing. All flight operations will be conducted in day and VFR “see and avoid” conditions within the confines of the airfield property.

The AirSTAR Project UAS physical characteristics are based on commercially available airborne and ground station uplink control sport equipment operating on either 72MHz or 2.4GHz radio frequencies. The vehicle is a turbine powered high performance scaled trainer constructed of fiberglass, Kevlar and graphite reinforced composite. The vehicle is designed by NASA, specifically for the AvSP test bed program, as shown in Figure 2-1. The vehicle weighs less than 100 pounds and has excellent aerodynamic stability and control characteristics.



PHASE III - *GTM – T1*



- Designed and built by LaRC
- Span: 82.2", Length: 102.5"
- Weight: 40 lbs dry, 55 lbs wet
- Wing Loading ~ 146 oz/ft²
- Engine: dual JetCat P70's, 17.5 lbs thrust each
- Fuel: K1 kerosene & turbine oil, 20:1, 1.8 gal capacity
- Flying time: ~ 12 minutes
- Stall speed: 52 mph
- Take-off distance: ~ 200 ft
- Test speed: ~ 85 mph
- Taxi tests completed
- 17 flights completed



Figure 2-1: Typical AirSTAR Project UAS Scaled Pilot Trainer