Memorandum

U.S. Department
of Transportation

Subject: TigerShark noise flight test at Griffiss Airport

Date: May 27, 2016

From: David A. Senzig

Reply to Attn. of: Volpe Center
V-324
55 Broadway
Cambridge, MA

To: Dr. Mehmet Marsan
Bruce Conze
Gregg Fleming
Christopher Roof

Dear Dr. Marsan,

This memorandum documents preliminary results of the noise flight test conducted on the Navmar TigerShark UAS at Griffiss International Airport (KRME, http://www.ocgov.net/airport) in Rome, New York on May 17, 2016. This memorandum is intended to provide you with a preliminary summary of the data collected during the test; we intend to provide a full report after additional data processing.

Background

The TigerShark noise measurement was conducted with the support of Navmar (the manufacturer of the UAS), NUAIR (holder of the Certificate of Authorization for UAS operations at Griffiss), the Oneida County government (operator of KRME), and Mississippi State University (MSU).

The TigerShark is a fixed-wing, piston engine UAS with a MTOW of about 450 lb (https://nasc.com/Tigershark.php). For the noise test, the weight of the aircraft was reduced to 397 lb.

The noise test was conducted on the southeast end of the primary runway at KRME (runway 33). The area is grass covered, with no nearby obstacles. Staff from KRME mowed the grass before the test to a height of about three inches. The area conforms to the requirements of Title 14 CFR Part 36 Appendix G, Section G36.101(a). The noise test itself was conducted under conditions conforming to Section G36.101(b).

Acoustic Equipment

To conduct the acoustic measurements, Volpe staff used a system based on a Larson Davis 831 Sound Level Meter and a Sound Devices 744T digital audio recorder. All required instrumentation was calibrated before the test. The microphone was mounted on a ground plate in conformance with Section G36.107(a).

The location of the acoustic equipment was surveyed using a U-Blox NEO-M8T GNSS receiver; the data was post-processed using precise point position (PPP) methods of increasing the survey's accuracy. PPP methods increase accuracy by correcting for atmospheric properties and satellite clock biases observed during the survey.

Measurement Data

Navmar pilots conducted the flight test in conformance with Section G36.111 flight procedures. Nine simulated takeoffs flights were conducted for the Appendix G test; one flight was removed from the data set because its airspeeds at overhead was outside the V_y ±5 knot criteria described in G36.111(a). All flights were conducted within the atmospheric absorption window of Section G36.201. The Appendix G measured and corrected maximum A-weight, slow response (Section G36.105(e)) sound levels for the seven acceptable passes are given in Table 1 below. The measured data were processed through a computer program which applies the corrections of Section G36.201. For this aircraft at the conditions of the test, only the distance correction (Section G36.201(d)(2)) was invoked.

Table 1, TigerShark Part 36 Appendix G noise test results

Pass	Altitude AGL (feet)	Measured L_{ASmx}	Corrected L_{ASmx}
19	781	85.2	82.8
21	656	86.1	82.6
22	726	86.2	83.1
23	746	86.3	83.5
24	768	85.5	82.9
25	726	84.9	81.8
27	776	85.4	82.9
28	696	86.3	82.8

The average of the noise levels for the eight passes is 82.8 dBA. The 90% confidence interval is ±0.28 dBA, within the limits of ±1.5 dBA required by Section G36.203. The noise level of the TigerShark is over the 70 dBA limit for aircraft of this weight as given in Section G36.301(c).

Please feel free to contact me if you have any questions or comments about the information contained in this memorandum. As mentioned above, a more detailed report containing additional analyses will be forthcoming.

Respectfully,

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