DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE LIFE CYCLE MANAGEMENT CENTER
WRIGHT-PATTERSON AIR FORCE BASE OHIO

BULLETIN
AWB–350
31 JUL 2020

United States Air Force (USAF) Airworthiness Bulletin (AWB)-350

Subject: Unmanned Aircraft Systems (UAS) Airworthiness (AW)

Attachments: (1) UAS Assessment Flow Chart
(2) Glossary of References and Supporting Information

1. **Purpose.** This bulletin outlines the AW assessment process for all UAS.

2. **Office of Primary Responsibility.** USAF AW Office, AFLCMC/EZZ (USAF.Airworthiness.Office@us.af.mil).

3. **Definitions.**

3.1. **Unmanned Aircraft System**. A system comprised of individual elements consisting of the unmanned air vehicle (UAV), the control station, and any other support elements necessary to enable operation including, but not limited to, data links, communications systems/links, and UAV-unique launch and recovery equipment. There may be multiple unmanned aircraft, control stations, and support elements within a UAS. The control station may be located on the ground (stationary or mobile), on a ship, submarine, aircraft, etc.

3.2. **Unmanned Air Vehicle.** A remotely piloted/operated, semi-autonomous, or autonomous air vehicle and its on-board operating system. This does not include air vehicles designed for one-time use as a weapon (e.g., cruise missile).

4. **Applicability.**

4.1. This bulletin applies to all UAS that the USAF owns, leases, operates, uses, designs, or modifies.

4.2. Control stations, fixed or mobile, are considered part of the UAS and should be considered in the AW assessment.

4.3. Satellite and terrestrial communication systems, when used, are not considered part of the UAS. However, their contributions to factors such as latency, error rates and availability of safety of flight communications must be considered in the AW assessment.

4.4. This bulletin is not applicable to guided munitions. A system is considered to be a guided munition when it is designed to be non-recoverable.

5. **Background.** For certain UAS, it may not be practical or cost-effective to obtain detailed design data and/or AW compliance information. The UAS size, weight, complexity, cost, and mission are all factors in determining the appropriate process resulting with an AW approval.

6. **Process.** The assessment methodology described in this bulletin considers group, air vehicle replacement cost, and usage environment. Attachment 1 illustrates the factors described below for conducting the appropriate AW assessment.

6.1. Since UAV designs can span a wide variety of sizes and complexity, it is practical to tailor the assessment methodology to the system under review. Joint Publication 3-30, *Joint Air Operations*, categorizes UAS into five groups based on the attributes of weight, altitude and speed. For AW purposes, only weight (shown in Figure 1) is considered when determining the group.

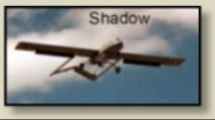
UAS Groups	Maximum Weight (lbs) (MGTOW)	Normal Operating Altitude (ft)	Speed (kts)	Representative UAS	
Group 1	0 – 20			Raven (RQ-11), WASP	
Group 2	21 – 55			ScanEagle	
Group 3	< 1320			Shadow (RQ-7B), Tier II / STUAS	
Group 4	>1320			Fire Scout (MQ-8B, RQ-8B), Predator (MQ-1A/B), Sky Warrior ERMP (MQ-1C)	
Group 5				Reaper (MQ-9A), Global Hawk (RQ-4), BAMS (RQ-4N)	

Figure 1: UAS Group Categorization for USAF AW

6.2. **AW Assessment (Group 1-3 UAS).** For UAS in Groups 1-3, labelled as Small UAS (SUAS) per AFPD 11-5, it may not be practical or cost-effective to generate design or test data to show compliance with military or civil aviation standards. Airworthiness Circular (AC)-20-02, *SUAS AW Assessments*, provides an acceptable method for conducting AW assessments for Group 1-3 UAS. Alternate formats of the SUAS Airworthiness Assessment must be approved by the AW Office.

6.3. **AW Assessment (Group 4-5 UAS).** For UAS in Groups 4 and 5, the standard AW process is followed. However, if conditions in 6.3.1 and 6.3.2 are met, AC-20-02 can be used as an acceptable method for conducting AW assessments:

6.3.1. The replacement cost of the UAV under review is less than $1M (i.e., no higher than Marginal severity per MIL-STD-882) and,

6.3.2. The requested AW approval supports only flight test activities under AFI 99-103 or AFRLI 61-103.

6.3.3. For UAS using AC-20-02 for flight test activities, the Technical Airworthiness Authority (TAA) will determine if additional AW assessments, if any, are required prior to issuing AW approvals for combat/contingency operations.

6.4. **Risks**. AW assessments may result in identification of risks. When using AC-20-02, a single, overall risk level will be determined. The overall risk level will be no lower than the highest residual risk level for any identified hazard. Risk acceptance is required prior to issuance of any AW approval.

6.5. **AW Approvals**. For all UAS, the TAA will issue AW approvals upon formal risk acceptance. For UAS assessed using AC-20-02, the TAA will issue a Special Military Flight Release (MFR).

THOMAS M. FISCHER, SES
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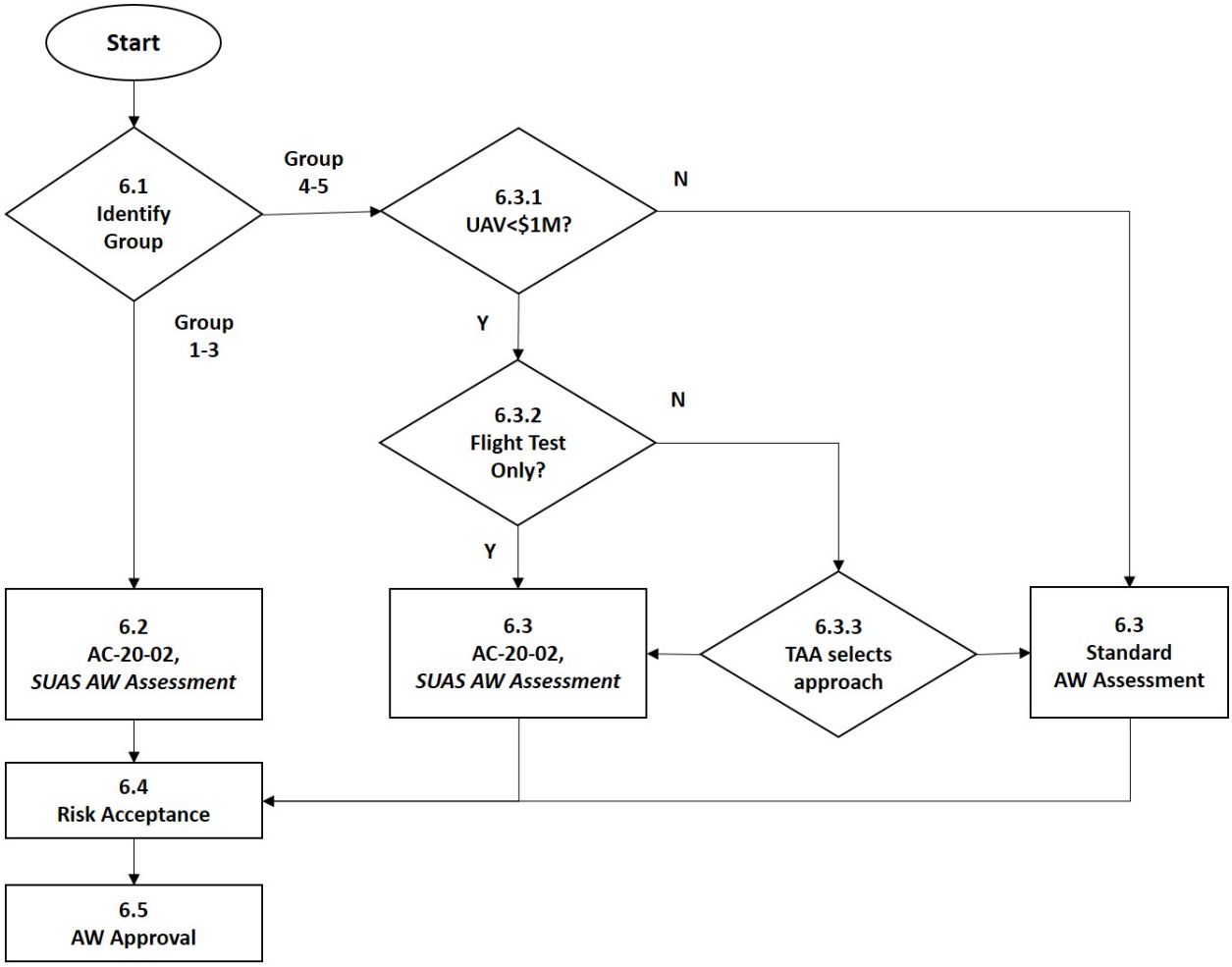
Attachment 1

UAS Assessment Flow Chart



Attachment 2

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFI 99-103, *Capabilities-Based Test and Evaluation*, 18 November 2019

AFPD 11-5, *Small Unmanned Aircraft Systems,* 7 June 2019

AFRLI 61-103, *AFRL Research Test Management*, 28 October 2015

Joint Publication 3-30, *Joint Air Operations,* 25 July 2019

MIL-STD-882, *System Safety*, 11 May 2012

Abbreviations and Acronyms

AW – Airworthiness

AWB – Airworthiness Bulletin

MFR – Military Flight Release

SUAS – Small Unmanned Aircraft System

TAA – Technical Airworthiness Authority

UAS – Unmanned Aircraft System

UAV – Unmanned Air Vehicle

USAF – United States Air Force