

**BY ORDER OF THE
SECRETARY OF THE AIR FORCE**

**AIR FORCE INSTRUCTION 11-5FT,
VOLUME 2**



27 AUGUST 2015

Flying Operations

**SMALL UNMANNED AIRCRAFT SYSTEMS
(SUAS) FLIGHT TEST EVALUATION
CRITERIA**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

ACCESSIBILITY: Publications and forms are available for downloading or ordering on the e-Publishing website at www.e-Publishing.af.mil

RELEASABILITY: There are no releasability restrictions on this publication.

OPR: AFMC/A3

Certified by: AF/A35
(Maj Gen Martin Whelan)

Pages: 34

This publication implements Air Force Policy Directive (AFPD) 11-5, *Small Unmanned Aircraft Systems (SUAS) Rules, Procedures and Service*; and AFI 11-502, *Small Unmanned Aircraft Systems Training, Standardization/Evaluation Programs, and Operations*. It provides guidance and procedures for Small Unmanned Aircraft Systems (SUAS) in Air Force Materiel Command (AFMC) and US Air Force Academy (USAFA). It applies to individuals at all levels who operate Group 1, Group 2, or Group 3 SUAS for the purposes of Research, Development, Test and Evaluation (RDT&E) within or on the behalf of AFMC and USAFA, including the Air Force Reserve and Air National Guard (ANG). (AFMC and USAFA units operating SUAS for operational or training missions, not directly associated with RDT&E, operate under the appropriate AFI 11-5 Mission, Design, Series (MDS) instruction.) This AFI may be supplemented at any level, but all supplements that directly implement this publication must be routed to the OPR for coordination prior to certification and approval. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*, route AF Forms 847 from the field through the appropriate functional chain of command. The authorities to waive wing/unit level requirements in this publication are identified with a Tier (“T-0, T-1, T-2, T-3”) number following the compliance statement. See AFI 33-360, *Publications and Forms Management*, Table 1.1 for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the Publication OPR for non-tiered compliance items.

Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW Air Force Records Disposition Schedule (RDS) located in the Air Force Records Information Management System (AFRIMS). This publication requires the collection and or maintenance of information protected by Title 5 United States Code (USC) Section 552a, *The Privacy Act of 1974*. The authorities to collect or maintain the records prescribed in the publication are 10 USC § 8013, *Secretary of the Air Force*; Executive Order 9397, *Numbering System for Federal Accounts Relating to Individual Persons*, as amended. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

Chapter 1—GENERAL INFORMATION	3
1.1. Scope.	3
1.2. Recommended Changes.	3
1.3. Waivers.	3
1.4. Procedures:	3
1.5. Grading Instructions.	4
1.6. Emergency Procedures Evaluation (EPE).	4
1.7. Publications.	5
Chapter 2—EVALUATION REQUIREMENTS	6
2.1. General.	6
2.2. Instrument Evaluation.	6
2.3. Qualification Evaluation.	6
2.4. Mission Evaluation.	7
2.5. Instructor Evaluation.	7
2.6. Spot Evaluation.	7
2.7. Evaluation Requirements.	7
Attachment 1—GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION	8
Attachment 2—SUAS OPERATOR (EXTERNAL) EVALUATION CRITERIA	15
Attachment 3—SUAS OPERATOR (INTERNAL) AND PAYLOAD OPERATOR EVALUATION CRITERIA	25

Chapter 1

GENERAL INFORMATION

1.1. Scope. AFMC produces a three-volume set of Flight Test (FT) instructions containing attachments for each SUAS Group flown in AFMC. These instructions are numbered AFI 11-5FT Volume 1, 2, and 3, and contain the training, evaluation criteria, and operations procedures, respectively, for each SUAS Group. AFMC uses these instructions in lieu of AFI 11-5 GP-specific Volumes for Research Developmental Test and Evaluation (RDT&E) flying operations. In the absence of published guidance, AFMC units will coordinate through AFRL/DO to HQ AFMC/A3V for approval of locally developed guidelines. If possible, these guidelines will be consistent with similar guidance specified in the appropriate AFI 11-5 GP-specific lead MAJCOM Volumes.

1.1.1. All evaluations will be conducted IAW the provisions of AFI 11-502, Volume 2, AFMC and unit supplements, and this instruction. Information gathering documents will be established as forms in accordance with AFI 33-360, *Publications and Forms Management*.

1.2. Recommended Changes. Send comments and suggested improvements to this volume on AF Form 847, *Recommendation for Change of Publication*, through AFRL/DO to HQ AFMC/A3V, 508 W. Choctawhatchee Avenue, Suite 4, Eglin AFB FL 32542-5713. HQ AF/A3 will approve all interim changes to this instruction.

1.3. Waivers. Unless otherwise specified in this instruction, HQ AFMC/A3V is the waiver authority for this instruction. All waivers will be routed through appropriate operations channels to SUAS operating unit commanders, and the FOA providing overall flight operations oversight, prior to submission to HQ AFMC/A3V. Use an AFMC Form 73, *AFMC Flight Operations Waiver Request*, to process the waiver.

1.3.1. Tier requirements refer to waiver authority based on level of risk.

1.3.1.1. "Tier 0" (T-0) requirements are reserved for requirements that non-compliance is determined and waived by respective non-Air Force authority.

1.3.1.2. "Tier 1" (T-1) requirements are reserved for requirements that non-compliance may put airman, mission, or program strongly at risk, and may only be waived by the MAJCOM/CC or delegate with concurrence of publication approver. When multiple MAJCOMs are affected, then T-1 is appropriate.

1.3.1.3. "Tier 2" (T-2) requirements are reserved for requirements that potentially put the mission at risk or potentially degrade the mission or program, and may only be waived by the MAJCOM/CC or delegate.

1.3.1.4. "Tier 3" (T-3) requirements are reserved for requirements that non-compliance has a remote risk of mission failure, and may be waived by the Wing/CC but no lower than the OG/CC.

1.4. Procedures:

1.4.1. Small UAS Evaluators (SUAS-Es) will use the evaluation criteria contained in **Attachments 2 and 3** for conducting all flight evaluations and **paragraph 1.6** for all emergency procedures evaluations. To ensure standard and objective evaluations, SUAS-Es

will be thoroughly familiar with the prescribed evaluation criteria. If guidance published in this volume is not sufficient or does not apply, follow lead MAJCOM guidance. (T-2)

1.4.2. Unless specified, the examinee or SUAS-E may observe in any flight position (to include external or internal operator) which will best enable the SUAS-E to conduct a thorough evaluation.

1.4.3. The SUAS-E will brief the examinee on the purpose of the evaluation and how it will be conducted prior to flight. The examinee will accomplish required flight planning in accordance with the flight position during the evaluation. SUAS-Es will be furnished a copy of necessary mission data, and mission materials.

1.4.4. The SUAS-E will thoroughly debrief all aspects of the flight. This debrief will include the examinee's overall rating, specific deviations, area grades assigned (if other than qualified) and any required additional training.

1.5. Grading Instructions. This instruction and its attachments contain the standards and criteria for conducting evaluations in AFMC SUAS. These standards when applied with SUAS-E judgment are the determining factor in awarding sub-area and overall evaluation grades.

1.5.1. The SUAS-E will evaluate flight parameters based on conditions of smooth air and a stable aircraft. Do not consider momentary deviations from tolerances provided the examinee applies prompt corrective action and such deviations do not jeopardize flying safety. The SUAS-E will consider cumulative deviations when determining the overall grade.

1.5.2. The SUAS-E will evaluate each area accomplished during the evaluation using the standards provided in this instruction and assign an appropriate grade for the area. Derive the overall flight evaluation grade from a composite of the area grades. SUAS-E judgment must be exercised when the wording of areas is subjective and when specific situations are not covered. SUAS-E judgment will be the determining factor in arriving at the overall grade.

1.5.3. If the examinee receives an unqualified grade in any critical area, an overall unqualified grade will be assigned.

1.5.4. The general grading criteria applied during all phases of flight will be specified in the MDS-specific attachment for each SUAS or in equivalent documentation for research flight test SUASs.

1.6. Emergency Procedures Evaluation (EPE). SUAS Operators will be administered EPEs. Use an ATD specific to the SUAS to perform EPEs (when available and properly configured) to the maximum extent possible. If an ATD is not used, the EPE will be conducted in an appropriate unit training device (UTD) or ground control station procedures trainer (GCS Trainer), in order of preference. If a training device is not used, the EPE will be an oral evaluation. (T-3)

1.6.1. The following items, as applicable, will be included on all emergency procedures evaluations:

1.6.1.1. SUAS General Knowledge.

1.6.1.2. Emergency Procedures. Evaluate a minimum of two emergency procedures per phase of flight (i.e., pre-takeoff, takeoff, cruise and landing). All Bold Face/CAPS will be evaluated (if applicable).

1.6.1.3. Crew Resource Management (CRM).

1.6.1.4. Unusual attitude recoveries will be evaluated IAW SUAS specific operating procedures or approved test plans during all EPEs. If performed in an ATD, this fulfills the requirement for Unusual Attitude Recoveries on Operator Instrument/Qualification evaluations.

1.6.2. The following additional items will be included on EPEs as a requisite for the qualification evaluation (if applicable):

1.6.2.1. Evaluate use of standby/emergency instruments. N/A unless so equipped.

1.6.2.2. Alternate or Divert Recovery/landing Airfields. Evaluate a minimum of one alternate approach other than the planned recovery. Unlike for manned evaluations, this does not have to be accomplished at a different (“strange field”) location.

1.6.3. EPE scenarios will be tailored to unit tasking and will include emergencies occurring during situations a SUAS operator might encounter while flying the unit’s mission (Functional Check Flight, R&D Flight Test, etc.).

1.6.4. Examinees receiving an overall unqualified grade will be placed in supervised status until a re-evaluation is successfully accomplished. Examinees receiving an overall unqualified grade because of an unsatisfactory Bold Face/CAPS evaluation will not be permitted to fly in their SUAS operator position until a successful re-evaluation is accomplished. If examinee receives a grade of qualified with additional training required for an EPE, the SUAS-E will indicate if the additional training will be accomplished before the flight evaluation. (T-3)

1.6.5. The following grading criteria will be used to grade individual items on EPE’s:

1.6.5.1. Q: Performance is correct. Quickly recognizes and corrects errors.

1.6.5.2. Q-: Performance is safe, with limited proficiency. Makes errors of omission or commission.

1.6.5.3. U: Performance is unsafe or indicates lack of knowledge or ability.

1.7. Publications. The examinee will submit their issued copy of required publications for evaluation. Digital T.O.s, Operators Manuals, Pilot Operating Handbook, etc., are approved for use by individual SUAS personnel. Maintain one copy of the designated digital media per individual IAW AFI 11-215. Units that fly multiple variants of a specific SUAS (i.e., RQ-11B and RQ-11C) will declare one variant as the primary system. Issue individual publications based on this determination.

Chapter 2

EVALUATION REQUIREMENTS

2.1. General.

2.1.1. All evaluations will follow the guidelines set in AFI 11-502, Volume 2, Chapter 5. The procedures outlined in this chapter apply to all flying programs.

2.1.2. Required evaluation areas are contained in forms specified in AFMC Supplement to AFI 11-502 Volume 2. When it is impossible to evaluate a required area in flight, it will be evaluated by an alternate method (i.e., in an UTD/ATD/CPT or by oral examination). Document the reason a required area was not evaluated in-flight. Document the method of evaluation in Section D of the evaluation record. If the SUAS-E determines the required item cannot be adequately evaluated by an alternate method, the examinee will require an additional flight to complete the evaluation. (T-3)

2.1.3. Evaluate all issued flight publications for currency and accuracy on all flight evaluations. Units may specify additional publications to be evaluated in the unit supplement to AFI 11-502 Volume 2.

2.1.4. The SUAS specific Form 59 may be used as a draft form until the Form 8/8a is finalized.

2.2. Instrument Evaluation. Normally N/A for SUAS. Fielded and research test SUAS and SUAS-Os have neither the equipment nor training and certifications to comply with procedures for operation under Instrument Flight Rules (IFR). SUAS missions flown using typical ground control stations are inherently “instrument-like” flight operations using controls and instruments unique to the SUAS. Evaluations will be tailored accordingly for each SUAS operator. Unless conducting IFR operations, however, SUAS-Os are not required to receive an Instrument evaluation.

2.3. Qualification Evaluation. Requirements for a SUAS Operator Qualification evaluation are as follows: (T-3)

2.3.1. Minimum ground phase requisites are closed and open book examinations, EPE, and Bold Face/CAPS Written Exam. Answers must contain all Bold Face/CAPS items in proper sequence. Abbreviations are allowed.

2.3.2. SUAS normal navigation, approaches and related procedures (holding, fix-to-fix, waypoint following), normal VFR patterns and landing are required, as applicable to the SUAS being flown. External and Internal Operators will perform applicable emergency work as dictated by crew station (External/Internal), control method (R/C, autonomous, etc), and SUAS Group. These tasks may include engine out, no flap, partial flap, ground station lost navigation and/or comm link, and other emergency procedures as they apply.

2.3.3. SUAS External Operators will complete all flight procedures required by the specific SUAS as a requisite for the qualification evaluation.

2.3.4. All SUAS-Os will be evaluated on compliance with National Airspace System Rules and procedures. Flight test mission planning will also be graded for adequate consideration of potential hazards during all flight operations including, but not limited to: high traffic

areas, other military training route crossing points/deconfliction, noise sensitive areas, no-fly areas and abort considerations. (T-3)

2.3.5. Multiple qualifications will be handled IAW AFI 11-502, Volume 2. (T-3)

2.4. Mission Evaluation. IAW AFI 11-502, AFMC Sup 1 (5.2.1.2), the requirement for a Mission evaluation for AFMC SUAS operators is waived. However, evaluators will attempt to include mission type events on a qualification evaluation if the unit mission commonly includes these, and both the examinee and evaluator are experienced and qualified in those mission events. Mission type events include any advanced handling or Phase II event such as basic flight test techniques, test team/crew coordination, approaches to stalls, confidence maneuvers, payload/weapons operations and deliveries, autopilot gain tuning,; unique hand-off procedures; and functional checks, etc. The Mission section of the evaluation sheets contains four areas to be evaluated if mission type events are accomplished on a Qualification evaluation.

2.5. Instructor Evaluation. Initial Instructor and Instructor Requalification evaluations will be conducted IAW AFI 11-502, Volume 2, Chapter 5. Flight evaluations will include a thorough evaluation of the examinee's instructor knowledge and ability. The instructor candidate will demonstrate to the evaluator an EPE IAW AFMC grade sheets. This is a one-time check in which the examinee must demonstrate the ability to instruct in various phases of the unit's mission. Except for requirements detailed on AFMC Evaluation Sheets, specific profiles and/or events will be determined by the SUAS-E. All subsequent periodic evaluations (for example, Qualification, Mission) will include instructor portions during the evaluations. Initial and Requalification Instructor Evaluations will include the applicable portions of the following sections: General; Ground; Qualification; and Instructor.

2.6. Spot Evaluation. Spot evaluations will be conducted IAW AFI 11-502, Volume 2, Chapter 5. A SPOT evaluation is an evaluation not intended to satisfy the requirements of a periodic (i.e., QUAL, MSN, INSTR) evaluation. A spot has no particular requisites or requirements, but may be converted into a periodic evaluation if all of the requirements for that evaluation are met. SUAS-E objectivity evaluations will be documented as SPOT evaluations.

2.7. Evaluation Requirements. Requirements for all SUAS operator evaluations are identified in forms as specified in AFMC Supplement to AFI 11-502 Volume 2. Each crew position has specific section requirements and evaluation criteria. Use forms specified in AFMC Supplement to AFI 11-502 Volume 2 for conducting all aircrew evaluations. To conserve flying resources, units will make every attempt to combine evaluations (for example QUAL/INSTR/INSTM examinations will be combined to the maximum extent possible).

SCOTT A. VANDER HAMM, Maj Gen, USAF
Deputy Chief of Staff, Operations

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFPD 11-5, *Small Unmanned Aircraft Systems (SUAS) Rules, Procedures, and Service*, 17 Aug 09

AFI 11-502V1, *Small Unmanned Aircraft Systems Training*, 26 Apr 2012

AFI 11-502V2, *Small Unmanned Aircraft Systems Standardization/Evaluation Program*, 26 Apr 2012

AFI 11-502V3, *Small Unmanned Aircraft Systems Operations*, 26 Apr 2012

AFI 11-215, *USAF Flight Manuals Program (FMP)*, 22 Dec 2008

AFI 11-215 AFMC SUP 1 (Holdover), *USAF Flight Manuals Program (FMP)* 25 May 2011

AFI 13-212, *Range Planning & Operations*, 16 Nov 2007

AFMAN 33-363, *Management of Records*, 1 Mar 2008

AFI 33-360, *Publications and Forms Management*, 25 Sep 2013

Forms Adopted

AFMC Form 59, *Aircrew Evaluation (SUAS)*

AFMC Form 73, *AFMC/A3V Waiver Request*

AFMC Form 80, *Multiple Qualification Request and Authorization*

AF Form 8, *Certification of Aircrew Qualification*

AF Form 8a, *Certification of Aircrew Qualification (Multiple Aircraft)*

AF Form 847, *Recommendation for Change of Publication*

Abbreviations and Acronyms

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFPAM—Air Force Pamphlet

AFPD—Air Force Policy Directive

AFMC—Air Force Materiel Command

AFRC—Air Force Reserve Command

AFSOC—Air Force Special Operations Command

AGL—Above Ground Level

ANG—Air National Guard

ATC—Air Traffic Control

ATD—aircrew training device
CAPS—Critical Action Procedures
COA AFSOC—Certificate of Authorization
CONUS AFSOC—Continental United States
COMSEC—Communications Security
COP—Communities of Practice
CPT—cockpit procedures trainer
CRM—Crew Resource Management
DH—decision height
DNIF—Duties Not Including Flying
DoD—Department of Defense
EO—External Operator
EOC—End of Course
EP—Evaluator Pilot/emergency procedures
EPE—Emergency Procedures Evaluation
ETCA—Education and Training Course Announcement
EVS—Electro-Optical Viewing System
FAA—Federal Aviation Administration
FAR—Federal Aviation Regulation
FCIF—Flight Crew Information File
FLIP—Flight Information Publication
FMP—Flight Manuals Program
FTU—Formal Training Unit
GCS—Ground Control Station
GPS—Global Positioning System
IAW—In Accordance With
IFR—Instrument Flight Rules
INIT INSTR—Initial Instructor
INSTR—Instructor (IP)
IO—Internal Operator
KIAS—knots indicated airspeed
LOL—Loss of Link

MAJCOM—Major Command
MC—Mission Commander
MR—Mission Ready
MFR—Memorandum For Record
MO—Mission Operator
MQF—Master Question File
N/A—Not Applicable
NAS—National Airspace System
NGB—National Guard Bureau
N/N—No Notice
NOTAM—Notices to Airmen
OCR—Office of Collateral Responsibility
OPR—Office of Primary Responsibility
ORM—Operational Risk Management
PCS—Permanent Change of Station
Q—Qualified
QUAL—Qualification
QUAL/MSN—Qualification/Mission
R/C—Radio Control
RDS—Records Disposition Schedule
RDT&E—Research Development Test and Evaluation
RQ—Requalification
RVR—Runway Visual range
RVT—Remote Video Terminal
SAV—Staff Assistance Visit
SEB—Standardization/Evaluation Board
SELO—Standardization/Evaluation Liaison Officer
SFO—simulated flame out
SIB—Safety Investigation Board
SIM—Simulator
STAN/EVAL—Standardization & Evaluation
SUAS—Small Unmanned Aircraft Systems

SUASOPS—Small Unmanned Aircraft Systems Operations

SUAS-E—Small Unmanned Aircraft Systems Evaluator

SUAS-I—Small Unmanned Aircraft Systems Instructor

SUAS-O—Small Unmanned Aircraft Systems Operator

TDY—Temporary Duty

U—Unqualified

UA—Unmanned Aircraft

UAS—Unmanned Aircraft System

UAV—Unmanned Aerial Vehicle

USAF—United States Air Force

UTD—unit training device

VFR—Visual Flight Rules

VMC—Visual Meteorological Conditions

Terms

Air traffic—Aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.

Bingo Fuel/Battery—The computed fuel or battery capacity remaining at a point in flight that will allow safe return to the point of intended landing with required reserve.

Catastrophic failure—Any failure that leads to the loss or destruction of the UA.

Command Chief Pilot—An aircrew/SUAS operator assigned to HQ AFMC/A3V or an appointee that assists the HQ Stan/Eval team and conducts flight evaluations on behalf of the headquarters.

Controlled airspace—A generic term that covers the different classification of airspace (Class A, Class B, Class C, Class D, and Class E airspace) and defined dimensions within which air traffic control service is provided to instrumented flight rules flights and to VFR flights in accordance with the airspace classification (see the Aeronautical Information Manual).

Critical Phase of Flight—Takeoff, low level (below MSA defined by 14 CFR 91.119), approach and landing.

Director—AFMC civilian equivalent having the same authority as a Squadron Commander

Evaluation Record—Either the AF Form 8as received through completion of a formal IQT course, or the AF Form 8a (or temporary AFMC Form 59) for unfielded test systems, as appropriate.

Evaluator (SUAS-E)—A SUAS operator who conducts evaluation of SUAS-Os, SUAS-I, and other evaluators in designated SUAS and promotes safety among SUAS-Os. Training and evaluation include air vehicle operation, qualification, unit employment, visual flight, and crew performance.

External Operator (EO)—The SUAS operator who, in the absence of full automatic takeoff and landing systems, visually controls the UA flight path through manual control commands directly to the flight controls, generally during takeoff and/or landing.

Fuel/Battery Capacity—

Normal Fuel/Battery Capacity—Fuel state on initial or at the final approach fix such that the aircraft can land with the fuel reserves specified in AFI 11-5FT Vol 3.

Minimum Fuel/Battery Capacity—Fuel state, where, upon reaching the destination, the aircraft can accept little or no delay. This is not an emergency situation but merely indicates an emergency situation is possible should any undue delay occur.

Emergency Fuel/Battery Capacity—Fuel state requires immediate traffic priority to safely recover the aircraft. An emergency will be declared and the aircraft immediately recovered at the nearest suitable field.

Ground Station Operator (GSO)—Currently referred to as the Internal Operator.

Initial Cadre—Normally, those personnel assigned to conduct flight testing of experimental, developmental, or new aircraft for which there are no established formal training programs nor standardized evaluation criteria. For SUAS test systems, Initial Cadre designations are appropriate when there are no Air Force-trained SUAS-O/I/E personnel already qualified to operate, or train or evaluate others in a particular type of aircraft or primary control system, and personnel must be selected to complete a non-Air Force or mutually supervised self-study program to attain qualification. The term “Requal Cadre” applies to Initial Cadre individuals who previously held a qualification in that system.

Instructor (SUAS-I)—A SUAS crewmember who conducts training of SUAS-Os and SUAS unit trainers in designated SUAS and promotes safety among SUAS crewmembers. Training include air vehicle operation, qualification, unit employment, visual flight, and crew performance.

Instructor Supervision—Supervision by an instructor of like specialty (see also Direct Instructor Supervision).

Inter-fly—The exchange and/or substitution of aircrews/SUAS operators and aircraft between other MAJCOMS and AFMC. These forces are not gained by AFMC.

Internal Operator (IO)—Formerly referred to as the Ground Station Operator (GSO). A SUAS operator that operates the UA from or within a control station that exercises complete control over the air vehicle, normally through an automated/autopilot system.

Maintenance—The inspection, overhauls, repairs, preservation, and/or the replacement of parts, but excludes preventive maintenance.

Mission commander (MC)—The designated individual tasked with the overall responsibility for the operation and safety of the SUAS mission.

National Airspace System (NAS)—All of the airspace above the surface of the earth over the United States and its possessions.

Night—The time between the end of evening nautical twilight and the beginning of morning nautical twilight converted to local time.

Off-Airport—Any location used to launch or recover an unmanned aircraft that is not considered an airport (i.e., an open field).

Operational Risk Management (ORM)—A logic-based common sense approach to making calculated decisions based on human, machine, mission, and media factors before, during, and after Air Force operations. It enables commanders, functional managers and supervisors to maximize operational capabilities while minimizing risks by applying a simple systematic process appropriated for all personnel and Air Force functions.

Pilot—Referred to as the SUAS Operator (External) The SUAS crewmember who, in the absence of full automatic takeoff and landing systems, visually controls the UA flight path, generally during takeoff and/or landing.

Pilot in Command (PIC)—For SUAS operations, the term “Lead SUAS-O” is used as the PIC-equivalent role in lieu of the term “PIC.” The person who has final authority and responsibility for the operation and safety of flight, has been designated as pilot in command before or during the flight, and holds the appropriate category, class, and type rating, if appropriate, for the conduct of the flight. The responsibility and authority of the pilot in command as described by 14 CFR 91.3, *Responsibility and Authority of the Pilot in Command*, apply to the unmanned aircraft PIC-equivalent, the Lead SUAS-O. The pilot in command position may rotate duties as necessary with equally qualified pilots. The individual designated as PIC may change during flight.

Requal Cadre—A subset of Initial Cadre individuals who previously held a qualification in that system. This situation may exist where a particular unfielded test SUAS system becomes unused for an extended time due to lack of test requirements, and at a later time new test requirements dictate regenerating a set of operators.

Restricted area—Airspace designated in FAR 1 within which the flight of aircraft, while not prohibited, is subject to restriction(s).

Safety of flight (SOF) messages—Electrically transmitted messages pertaining to any defect or hazardous condition, actual or potential, that can cause personal injury, death, or damage to aircraft, components or repair parts where a medium to high risk safety condition has been determined per AR 385-16.

Special use airspace (SUA)—Airspace designated by the FAA with specific vertical and lateral limits, established for the purpose of containing hazardous activities or activity that could be hazardous to nonparticipating aircraft. Limitation on nonparticipating aircraft may range from absolute exclusion to complete freedom of use within certain areas, depending upon activity being conducted.

Small Unmanned Aircraft Systems (SUAS)—UAS in Groups 1-3 of the DoD SUAS Groups matrix (see AFI 11-502 Vol 1 or Vol 3).

Temporary-2 (T-2) Modification—T-2 modifications are temporary modification required to support research, development, test, and evaluation (RDT&E), in service testing of potential replacement items (form, fit, and function), and for aircraft/stores compatibility testing.

Traffic pattern—The traffic flow that is prescribed for aircraft landing at, taxiing on, or taking off from an airport or airfield.

Training mission—Missions flown for flight qualification, refresher, or proficiency/currency training; ATP requirements, and authorized training exercises.

Unmanned Aircraft (UA)—An aircraft capable of flight beyond visual line of sight under remote or autonomous control for military purposes, primarily for reconnaissance, surveillance, and other intelligence gathering missions, as well as for the adjustment of artillery and mortar fire, and may be used in an aerial target spotting/identification role. A UA can be expendable or recoverable, can carry a payload, is not operated for sport or hobby, and does not transport passengers or crew. For purposes of compliance with 14 CFR 1, subchapter A, part 1.1., UAS are to be considered “aircraft,” typically either an “airplane” or “rotorcraft,” as defined in 14 CFR 1, subchapter A, part 1.1. (FAA refers to these aircraft as remotely operated aircraft).

Unmanned Aircraft System (UAS)—The entire unmanned aircraft system used to operate, communicate and fly an unmanned aircraft (UA). This includes the Unmanned Aircraft (UA), Ground Control Station (GCS), Remote Video Terminal (RVT), and communications equipment. It can also include video capture device and portable computer.

Visual Line-of-Sight—A method of control and collision avoidance that refers to the operator or observer directly viewing the unmanned aircraft and its surroundings with human eyesight. Corrective lenses (spectacles or contact lenses) may be used by the pilot or visual observer. Aids to vision, such as binoculars, field glasses, or telephoto television may be employed to assist as long as their field of view does not adversely affect the surveillance task, but these aids are not normally acceptable as a primary visual reference for control of the aircraft or collision avoidance during AFRL operations.

Attachment 2**SUAS OPERATOR (EXTERNAL) EVALUATION CRITERIA****A2.1. General Grading Standards.**

A2.1.1. The grading criteria in this attachment are divided into five sections: Ground Phase, General, Qualification, Instructor, and Mission. Use all sections for criteria applicable to the events performed on the evaluation. These sections match the sections of the SUAS Operator temporary flight evaluation worksheet (AFMC Form 59) specified in the AFMC Supplement to AFI 11-50V2.

A2.1.2. Evaluate events in Section C with respect to normal duties as it applies to the crew position and aircraft equipment.

A2.2. : Ground Phase.**A2.2.1. Area A-1: Publications.**

A2.2.1.1. Digital flight publications and operating manuals are approved for use by individual SUAS operators.

A2.2.1.2. Q. Assigned flight publications or operating manual were current, complete, and usable for any of the unit's tasking.

A2.2.1.3. Q-. Assigned flight publications contained deviations, omissions, and/or errors; however, contained everything necessary to effectively accomplish the mission and did not compromise safety of flight.

A2.2.1.4. U. Contained major deviations, omissions, and/or errors which compromise safety of flight.

A2.2.2. Area A-2: Emergency Procedures Evaluation.

A2.2.2.1. Q. Displayed correct, immediate response to Boldface and non-Boldface emergency situations. Effectively used checklist.

A2.2.2.2. Q-. Response to Boldface emergencies 100% correct. Response to certain areas of non-Boldface emergencies or follow-on steps to Boldface procedures was slow/confused. Used the checklist when appropriate, but slow to locate required data.

A2.2.2.3. U. Incorrect response for Boldface emergency. Unable to analyze problems or take corrective action. Did not use checklist, or lacks acceptable familiarity with its arrangement or contents.

A2.3. : General.**A2.3.1. Area B-1: Safety (Critical).**

A2.3.1.1. Q. Aware of and complied with all safety factors required for safe SUAS operation and mission accomplishment.

A2.3.1.2. U. Was not aware of or did not comply with all safety factors required for safe operation or mission accomplishment. A. clear lack of judgment hampered or precluded mission accomplishment. Allowed a dangerous situation to develop without taking proper corrective action or notifying other crew members.

A2.3.2. Area B-2: Judgment (Critical).

A2.3.2.1. Q. Executed the assigned mission in a timely, efficient manner. Conducted the flight with a sense of understanding and comprehension.

A2.3.2.2. U. Decisions or lack thereof resulted in failure to accomplish the assigned mission. Demonstrated poor judgment to the extent that safety could have been compromised.

A2.3.3. Area B-3: Flight Discipline (Critical).

A2.3.3.1. Q. Demonstrated strict professional flight and crew discipline throughout all phases of the mission.

A2.3.3.2. U. Failed to exhibit strict flight or crew discipline. Violated or ignored rules or instructions.

A2.3.4. Area B-4: Briefings.

A2.3.4.1. Q. Well organized and presented in a logical sequence. Concluded briefing in a timely manner for the circumstances given and the mission profile. Presented briefing in a professional manner. Effective use of training/visual aids. Flight members clearly understood mission requirements. Established objectives for the mission. Presented all training events and effective technique discussion for accomplishing the mission. Considered the abilities of all flight members. Briefed corrective action from previous mission and probable problem areas when appropriate.

A2.3.4.2. Q-. Events out of sequence, hard to follow, some redundancy. Did not make effective use of available training/visual aids. Dwelled on non-essential mission items. Omitted some minor training events. Limited discussion of techniques. Did not consider all flight members' abilities. Did not identify probable problem areas.

A2.3.4.3. U. Confusing presentation. Did not allow time for element/crew briefing (if applicable) and preflight of personal equipment, aircraft and ordnance. Did not use training aids. Redundant throughout briefing. Lost interest of flight members. Presentation created doubts or confusion. Did not establish objectives for the mission. Omitted major training events or did not discuss techniques. Ignored flight members' abilities and past problem areas.

A2.3.5. Area B-5: Personal Equipment.

A2.3.5.1. Q. Thoroughly familiar with personal equipment requirements, usage, and preflight.

A2.3.5.2. Q-. Possessed required personal equipment items and was familiar with most of the preflight and usage procedures.

A2.3.5.3. U. Unfamiliar with required personal equipment preflight and usage.

A2.3.6. Area B-6: Forms, Reports, Logs.

A2.3.6.1. Q. Completed or supervised completion of all required preflight and post flight forms and documentation without significant error.

A2.3.6.2. Q-. Completed or supervised completion of all required preflight and post flight forms and documentation with some errors or omissions that had to be corrected.

A2.3.6.3. U. Forms were incomplete, improperly filled out. Data on forms inaccurate detracting from recording the mission data.

A2.3.7. Area B-7: Flight Planning.

A2.3.7.1. Q. Developed a sound plan to accomplish the mission. Checked all factors applicable to flight in accordance with applicable directives. Considered NAS rules and requirements such as VFR requirements, airspeed restrictions and potential traffic conflicts. Developed contingencies to mitigate potential risks. Aware of alternatives available, if flight cannot be completed as planned. Read and initialed for all items in the Flight Crew Information File (FCIF)/Read Files. Prepared at briefing time.

A2.3.7.2. Q-. Same as above, except minor error(s) or omission(s) that did not detract from mission effectiveness. Demonstrated limited knowledge of performance capabilities or approved operating procedures/ rules in some areas.

A2.3.7.3. U. Made major error(s) or omission(s) that would have prevented a safe or effective mission. Displayed faulty knowledge of operating data or procedures. Did not review or initial Go/No-Go items. Not prepared at briefing time.

A2.3.8. Area B-8: Use of Checklists.

A2.3.8.1. Q. Used current checklist and accomplished all items in proper sequence with no deviations or omissions.

A2.3.8.2. Q-. Only minor deviations from checklist procedures were noted.

A2.3.8.3. U. Failed to use current checklist or deviated from checklist procedures resulting in the mission being compromised.

A2.3.9. Area B-9: Crew Resource Management.

A2.3.9.1. Q. Coordinated effectively with other crewmembers/mission personnel. Effectively used all crewmembers. Gave clear, concise crew instructions.

A2.3.9.2. Q-. Coordinated satisfactorily with other crewmembers/mission personnel. Some instructions were not clear and concise.

A2.3.9.3. U. Failed to coordinate with crewmembers/mission personnel. Did not give clear and concise instructions. Failed to utilize resources causing degradation of the mission.

A2.3.10. Area B-10: Communication Procedures.

A2.3.10.1. Q. Radio and intra-crew communications were concise, accurate and effective.

A2.3.10.2. Q- Minor terminology errors or omissions occurred, but did not significantly detract from situational awareness, mutual support or mission accomplishment.

A2.3.10.3. U. Radio or intra-crew communications over primary/secondary radios were inadequate or excessive. Inaccurate or confusing terminology significantly detracted from mutual support, situational awareness or mission accomplishment.

A2.3.11. Area B-11: Knowledge of Directives.

A2.3.11.1. Q. Demonstrated thorough knowledge of SUAS aircraft systems, limitations and performance characteristics.

A2.3.11.2. Q-. Knowledge of SUAS aircraft systems, limitations, and performance characteristics sufficient to perform the mission safely. Demonstrated deficiencies either in depth of knowledge or comprehension.

A2.3.11.3. U. Demonstrated unsatisfactory knowledge of SUAS aircraft systems, limitations or performance characteristics.

A2.4. : SUAS External Operator Qualification.**A2.4.1. Area C-1: Performance Data.**

A2.4.1.1. Q. Accurately computed/reviewed all required takeoff and landing data. Aware of abort considerations, runway condition, weather, impact of weather on mission accomplishment.

A2.4.1.2. Q-. Computed/reviewed required takeoff data with minor omissions or errors which did not detract from mission accomplishment or safety.

A2.4.1.3. U. Major errors or omissions which compromise safety. Faulty or improper knowledge of performance data.

A2.4.2. Area C-2: Preflight Inspection.

A2.4.2.1. Q. Established and adhered to station, engine start, taxi and take-off times to assure thorough preflight, check of personal equipment, crew briefing, etc. Accurately determined readiness of aircraft for flight.

A2.4.2.2. Q-. Minor procedural deviations which did not detract from the overall mission.

A2.4.2.3. U. Major deviations in procedure which would preclude safe mission accomplishment. Failed to accurately determine readiness of aircraft for flight. Crew errors directly contributed to a late takeoff which degraded the mission or made it non-effective.

A2.4.3. Area C-3: Engine Start.

A2.4.3.1. Q. Accomplished engine start IAW flight manual/test card procedures and checklists.

A2.4.3.2. Q-. Accomplished engine start with significant omissions or deviations from flight manual/test card checklist procedures that did not affect safety.

A2.4.3.3. U. Omitted required procedures. Deviations to flight manual/test card which could potentially damage aircraft or mission equipment.

A2.4.4. Area C-4: Taxi and Takeoff.

A2.4.4.1. Q. Completed all taxi checks correctly in accordance with flight manual and local/test card procedures. Operated aircraft safely. Performed takeoff in accordance with flight manual/test card procedures and techniques.

A2.4.4.2. Q-. Deviated from taxi checks in accordance with flight manual and local/test card procedures. Operated aircraft safely. Deviated from with flight manual/test card procedures and techniques during takeoff.

A2.4.4.3. U. Failed to coordinate with ground crew and safety observer prior to aircraft movement. Failed to adequately monitor taxi route or takeoff operation. Intervention required to prevent damage to aircraft. Takeoff potentially dangerous. Exceeded aircraft systems limitations or would have exceeded aircraft limitations without intervention.

A2.4.5. Area C-5: Climb Procedures.

A2.4.5.1. Q. Climb was IAW the applicable flight manual, or mission flight plan/test cards.

A2.4.5.2. Q-. Some under or over-control. Flight manual, or mission flight plan/test card deviations significant but did not affect safety of flight or mission accomplishment.

A2.4.5.3. U. Failed to comply with flight manual, or mission flight plan/test card procedures. Major deviation affecting safety and mission accomplishment.

A2.4.6. Area C-6: Basic Control.

A2.4.6.1. Q. Monitored basic aircraft control within specified tolerances dictated by the software and mission plan. Promptly reacted to flight deviations as a result of anomalies, contingency reaction triggered by software and aircraft conditions, manual initiated overrides, etc.

A2.4.6.2. Q-. Minor procedural deviations, which did not detract from the overall mission.

A2.4.6.3. U. Failed to anticipate vehicle actions dictated by the software and mission plan. Failed to monitor basic aircraft control. Failed to promptly react to flight deviations.

A2.4.7. Area C-7: Traffic Pattern.

A2.4.7.1. Q. Performed patterns/approaches IAW procedures outlined in the SUAS flight manual, operational procedures and local directives/test cards. Aircraft control was smooth and positive. Accurately aligned with runway. Maintained proper/briefed airspeed/AOA. Airspeed -5/+10 knots.

A2.4.7.2. Q-. Performed patterns/approaches with minor deviations to procedures outlined in the SUAS flight manual, operational procedures and local directives/test cards. Aircraft control was not consistently smooth, but safe. Alignment with runway varied. Slow to correct to proper/briefed airspeed/AOA/ Airspeed -5/+15 knots.

A2.4.7.3. U. Approaches not performed IAW procedures outlined in the SUAS flight manual, operational procedures and local directives/test cards. Erratic aircraft control. Large deviations in runway alignment. Exceeded Q- parameters.

A2.4.8. Area C-8--Go-Around:

A2.4.8.1. Q. Initiated and performed go-around promptly IAW SUAS flight manual and operational procedures and directives/test cards.

A2.4.8.2. Q-. Slow to initiate go-around or procedural steps.

A2.4.8.3. U. Did not self-initiate go-around when appropriate. Techniques unsafe or applied incorrect procedures. Erratic aircraft control. Large deviations in runway alignment.

A2.4.9. Area C-9--Engine-Out Traffic Pattern. Evaluate actions taken in response to actual or simulated emergencies that occur during the flight check (in-flight or on the ground) until the flight examiner declares the evaluation of the emergency procedure terminated.

A2.4.9.1. Q. Performed emergency procedures IAW applicable directives. Used sound judgment. Configured at the appropriate position/altitude. Smooth positive control of aircraft. Able to prioritize actions to safely recover the aircraft. Maintained aircraft control within appropriate standards.

A2.4.9.2. Q-. Performed emergency procedures with minor deviations, omissions, and/or errors from applicable directives. Configured at a position and altitude, which allowed for a safe approach. Minor deviations from procedures and altitudes/unnecessary maneuvering due to minor errors in planning or judgment; however, did not jeopardize the safe recovery of the aircraft.

A2.4.9.3. U. Did not comply with applicable procedures. Erratic airspeed control compounded problems associated with the emergency. Performed emergency procedures with major deviations, omissions, and/or errors from recommended procedures and altitudes. Required excessive maneuvering due to inadequate planning or judgment. Unable to safely recover the aircraft.

A2.4.10. Area C-10: In-flight Planning. This area assesses the examinee's ability to adapt to real-world constraints and effectively anticipate and adjust preplanned mission elements as necessary throughout the mission.

A2.4.10.1. Q. Effectively performed in-flight planning, including changing profile by adding, deleting, or adjusting route segments, data collections, mission events or test points, as required. Effectively adapted to dynamic changes in mission plan. Demonstrated ability to adjust mission profile to comply with time/fuel limitations, weather, area limits, mission constraints and objectives.

A2.4.10.2. Q-. In-flight planning included minor deviations, which did not compromise safety, or significantly detract from the mission.

A2.4.10.3. U. Unable to re-plan inflight, or adapt to changing mission requirements. Consistently behind the aircraft. Action or inaction compromised safety and successful mission accomplishment.

A2.4.11. Area C-11: Unusual Attitudes.

A2.4.11.1. Q. Smooth, positive recovery to level flight with correct recovery procedures.

A2.4.11.2. Q- Slow to analyze attitude, or erratic in recovery to level flight. Correct recovery procedures used.

A2.4.11.3. U. Unable to determine attitude. Improper recovery procedures were used.

A2.4.12. Area C-12: Slow Flight and Approach to Stall/Stalls.

A2.4.12.1. Q. Understands elements related to slow flight maneuvering. Can discern imminent stall indications and smoothly, positively and expeditiously recovers with minimum or no loss of altitude, attitude or heading. Recovers from stall (if performed) similarly without entering secondary stall.

A2.4.12.2. Q- Understands elements related to slow flight maneuvering, but recovers aircraft with some, but acceptable loss of altitude, with minimal loss of attitude and heading. Recovers from stall (if performed) with minor deviations, without entering secondary stall.

A2.4.12.3. U. Displays lack of understanding of slow flight maneuvering concepts. Cannot maintain heading or altitude in slow flight. Cannot discern conditions leading to stall. Triggers secondary stall.

A2.4.13. Area C-13: Crosscheck / Division of Attention. This area assesses the examinee's ability to properly prioritize and allocate his/her attention to relevant tasks.

A2.4.13.1. Q. Performed proper crosscheck of SUAS flight parameters (attitude, altitude, speed, heading) during all phases of flight. Maintained situational awareness as necessary to comply with ATC instructions and mission plan changes.

A2.4.13.2. Q-. Minor deviations in crosscheck which did not compromise safety or significantly detract from successful mission accomplishment.

A2.4.13.3. U. Improper or ineffective crosscheck. Unable to maintain situational awareness. Failed to recognize actual or potential conflicts or system faults.

A2.4.14. Area C-14: Descent, Approach, and Landing. Includes manual and/or external operator aided (if applicable) approach.

A2.4.14.1. Q. Performed correct procedures and maintained pattern to comply with ATC instructions and procedures. Maintained basic control and position orientation within aircraft performance limitations. Complied with mission plan approach and flight manual standards/test cards.

A2.4.14.2. Q-. Landing accomplished with significant deviations to established procedures but safety was not affected.

A2.4.14.3. U. Failed to monitor landing and ground operations. Incorrect or inappropriate procedures. Unable to maintain position orientation or ATC assigned airspace. Unsafe control inputs jeopardized safety.

A2.4.15. Area C-15: After Landing.

A2.4.15.1. Q. Appropriate after landing checks and aircraft taxi procedures were accomplished.

A2.4.15.2. Q-. Significant deviations or omissions from established procedures but safety and mission effectiveness were not affected.

A2.4.15.3. U. Checks were not accomplished in timely manner. Errors of omission committed without correction.

A2.4.16. Area C-16: Systems Knowledge.

A2.4.16.1. Q. Thorough knowledge of SUAS aircraft systems, limitations, and performance characteristics.

A2.4.16.2. Q-. Knowledge of SUAS aircraft systems, limitation, and performance characteristics sufficient to perform the mission safely. Deficiencies either in depth of knowledge or comprehension.

A2.4.16.3. U. Unfamiliar with systems operation. Unable to recall details, ops limits, or operational processes.

A2.4.17. Area C-17: NAS Rules and Procedures.

A2.4.17.1. Q. Complied with NAS rules/requirements and airspeed restrictions or potential traffic conflicts within NAS.

A2.4.17.2. Q-. Same as above but minor deviations detracted from safe accomplishment of the mission.

A2.4.17.3. U. Unfamiliar with NAS rules and procedures. Unaware of potential traffic conflicts. Did not use appropriate risk mitigating tools.

A2.5. : SUAS Operator (Internal) and Payload Operator Qualification. (See Atch 3)

A2.6. : Instructor.

A2.6.1. Area E-1: Instructional Ability.

A2.6.1.1. Q. Demonstrated ability to communicate effectively. Provided appropriate corrective guidance when necessary.

A2.6.1.2. Q-. Instruction was essentially correct with some deviations or omissions. Problems in communications or analysis did not degrade effectiveness of instructions.

A2.6.1.3. U. Inability to effectively communicate with the student. Did not provide corrective action where necessary. Did not plan ahead or anticipate student problems.

A2.6.2. Area E-2: Briefing/Debriefing.

A2.6.2.1. Q. Briefings were well organized, accurate and thorough. Reviewed student's present level of training and defined mission events to be performed. Excellent ability during critique to reconstruct the flight, offer mission analysis, and provide corrective guidance where appropriate. Completed all training documents in accordance with prescribed directives. Training syllabi reflected actual performance of student relative to standard. Briefed the student's requirements for the next mission.

A2.6.2.2. Q-. Minor errors or omissions in briefing, critique, and/or training documents that did not affect student progress.

A2.6.2.3. U. Briefings were marginal or non-existent. Did not review student's training folder or past performance. Failed to adequately critique student or provide complete mission analysis. Training syllabi grade did not reflect actual performance of student. Comments in training folder were incomplete. Strengths and weaknesses were not identified. Overlooked or omitted major discrepancies. Incomplete briefing of student's training requirements/objectives for mission.

A2.6.3. Area E-3: Demonstration and Performance.

A2.6.3.1. Q. Effectively demonstrated procedures and techniques on the ground and in-flight. Demonstrated thorough knowledge of SUAS aircraft systems, procedures, and all applicable publications and regulations.

A2.6.3.2. Q-. Minor discrepancies in the above criteria that did not affect safety or adversely affect student performance.

A2.6.3.3. U. Did not demonstrate correct procedure or technique. Insufficient knowledge about SUAS aircraft systems, procedures, and/or proper source material.

A2.6.4. Area E-4: Conduct of the Mission.

A2.6.4.1. Q. Executed the assigned mission in a timely, efficient manner. Conducted the flight with a sense of understanding and comprehension.

A2.6.4.2. Q-. Untimely or inappropriate decisions degraded or prevented accomplishment of a portion of the mission. Resources were not effectively used to the extent specific mission objectives were not achieved.

A2.6.4.3. U. Mission execution prevented accomplishment of a major portion of the mission. Undisciplined actions violated training rules repeatedly.

A2.7. : Mission (If applicable).

A2.7.1. Area F-1: Knowledge.

A2.7.1.1. Q. Fully knowledgeable in mission requirements, test plan directives, SUAS limitations, and partial flight manual. Effectively coordinated with other crew members and project personnel.

A2.7.1.2. Q-. Demonstrated a limited knowledge of mission requirements, test plan directives, SUAS limitations, or the partial flight manual which degraded a portion of the mission objective or CRM.

A2.7.1.3. U. Inadequate knowledge of mission requirements, test plan directive, SUAS limitations, and partial flight manual. Did not effectively use resources. Directly affected successful mission accomplishment.

A2.7.2. Area F-2: Planning.

A2.7.2.1. Q. Considered all factors necessary for mission accomplishment to include weather, mission profile, airspace utilization/restrictions, and proper documentation.

A2.7.2.2. Q-. Limited consideration of all factors necessary for mission accomplishment. However, did not affect mission objective directly, but may have contributed toward lack of effective CRM.

A2.7.2.3. U. Did not consider all factors necessary for mission accomplishment. Lack of consideration contributed negatively towards successful mission completion.

A2.7.3. Area F-3: Execution.

A2.7.3.1. Q. Accomplished major mission objectives in a timely and skillful manner.

A2.7.3.2. Q-. Errors or omission were made which did not render mission ineffective, but indicated a definite need for additional training.

A2.7.3.3. U. Improper execution of duties negatively impacted mission accomplishment.

A2.7.4. **Area F-4: Other Areas (As Required).**

Attachment 3**SUAS OPERATOR (INTERNAL) AND PAYLOAD OPERATOR EVALUATION
CRITERIA****A3.1. General Grading Standards.**

A3.1.1. The grading criteria in this attachment are divided into five sections: Ground Phase, General, Qualification, Instructor, and Mission. Use all sections for criteria applicable to the events performed on the evaluation. These sections match the sections of the SUAS-O Internal flight evaluation worksheet specified in the AFMC Supplement to AFI 11-50V2.

A3.1.2. Evaluate events in Section D with respect to aircraft equipment and normal duties as it pertains to the applicable crew position.

A3.2. : Ground Phase.**A3.2.1. Area A-1: Publications.**

A3.2.1.1. Digital flight publications and operating manuals are approved for use by individual SUAS operators.

A3.2.1.2. Q. Assigned flight publications or operating manual were current, complete, and usable for any of the unit's tasking.

A3.2.1.3. Q-. Assigned flight publications contained deviations, omissions, and/or errors; however, contained everything necessary to effectively accomplish the mission and did not compromise safety of flight.

A3.2.1.4. U. Contained major deviations, omissions, and/or errors which compromise safety of flight.

A3.2.2. Area A-2: Emergency Procedures Evaluation.

A3.2.2.1. Q. Displayed correct, immediate response to Boldface and non-Boldface emergency situations. Effectively used checklist.

A3.2.2.2. Q-. Response to Boldface emergencies 100% correct. Response to certain areas of non-Boldface emergencies or follow-on steps to Boldface procedures was slow/confused. Used the checklist when appropriate, but slow to locate required data.

A3.2.2.3. U. Incorrect response for Boldface emergency. Unable to analyze problems or take corrective action. Did not use checklist, or lacks acceptable familiarity with its arrangement or contents.

A3.3. : General.**A3.3.1. Area B-1: Safety (Critical).**

A3.3.1.1. Q. Aware of and complied with all safety factors required for safe SUAS operation and mission accomplishment.

A3.3.1.2. U. Was not aware of or did not comply with all safety factors required for safe operation or mission accomplishment. A. clear lack of judgment hampered or precluded mission accomplishment. Allowed a dangerous situation to develop without taking proper corrective action or notifying other crew members.

A3.3.2. Area B-2: Judgment (Critical).

A3.3.2.1. Q. Executed the assigned mission in a timely, efficient manner. Conducted the flight with a sense of understanding and comprehension.

A3.3.2.2. U. Decisions or lack thereof resulted in failure to accomplish the assigned mission. Demonstrated poor judgment to the extent that safety could have been compromised.

A3.3.3. Area B-3: Flight Discipline (Critical).

A3.3.3.1. Q. Demonstrated strict professional flight and crew discipline throughout all phases of the mission.

A3.3.3.2. U. Failed to exhibit strict flight or crew discipline. Violated or ignored rules or instructions.

A3.3.4. Area B-4: Briefings.

A3.3.4.1. Q. Well organized and presented in a logical sequence. Concluded briefing in a timely manner for the circumstances given and the mission profile. Presented briefing in a professional manner. Effective use of training/visual aids. Flight members clearly understood mission requirements. Established objectives for the mission. Presented all training events and effective technique discussion for accomplishing the mission. Considered the abilities of all flight members. Briefed corrective action from previous mission and probable problem areas when appropriate.

A3.3.4.2. Q-. Events out of sequence, hard to follow, some redundancy. Did not make effective use of available training/visual aids. Dwelled on non-essential mission items. Omitted some minor training events. Limited discussion of techniques. Did not consider all flight members' abilities. Did not identify probable problem areas.

A3.3.4.3. U. Confusing presentation. Did not allow time for element/crew briefing (if applicable) and preflight of personal equipment, aircraft and ordnance. Did not use training aids. Redundant throughout briefing. Lost interest of flight members. Presentation created doubts or confusion. Did not establish objectives for the mission. Omitted major training events or did not discuss techniques. Ignored flight members' abilities and past problem areas.

A3.3.5. Area B-5: Personal Equipment.

A3.3.5.1. Q. Thoroughly familiar with personal equipment requirements, usage, and preflight.

A3.3.5.2. Q-. Possessed required personal equipment items and was familiar with most of the preflight and usage procedures.

A3.3.5.3. U. Unfamiliar with required personal equipment preflight and usage.

A3.3.6. Area B-6: Forms, Reports, Logs.

A3.3.6.1. Q. Completed or supervised completion of all required preflight and post flight forms and documentation without significant error.

A3.3.6.2. Q-. Completed or supervised completion of all required preflight and post flight forms and documentation with some errors or omissions that had to be corrected.

A3.3.6.3. U. Forms were incomplete, improperly filled out. Data on forms inaccurate detracting from recording the mission data.

A3.3.7. Area B-7: Flight Planning.

A3.3.7.1. Q. Developed a sound plan to accomplish the mission. Checked all factors applicable to flight in accordance with applicable directives. Considered NAS rules and requirements such as VFR requirements, airspeed restrictions and potential traffic conflicts. Developed contingencies to mitigate potential risks. Aware of alternatives available, if flight cannot be completed as planned. Read and initialed for all items in the Flight Crew Information File (FCIF)/Read Files. Prepared at briefing time.

A3.3.7.2. Q-. Same as above, except minor error(s) or omission(s) that did not detract from mission effectiveness. Demonstrated limited knowledge of performance capabilities or approved operating procedures/ rules in some areas.

A3.3.7.3. U. Made major error(s) or omission(s) that would have prevented a safe or effective mission. Displayed faulty knowledge of operating data or procedures. Did not review or initial Go/No-Go items. Not prepared at briefing time.

A3.3.8. Area B-8: Use of Checklists.

A3.3.8.1. Q. Used current checklist and accomplished all items in proper sequence with no deviations or omissions.

A3.3.8.2. Q-. Only minor deviations from checklist procedures were noted.

A3.3.8.3. U. Failed to use current checklist or deviated from checklist procedures resulting in the mission being compromised.

A3.3.9. Area B-9: Crew Resource Management.

A3.3.9.1. Q. Coordinated effectively with other crewmembers/mission personnel. Effectively used all crewmembers. Gave clear, concise crew instructions.

A3.3.9.2. Q-. Coordinated satisfactorily with other crewmembers/mission personnel. Some instructions were not clear and concise.

A3.3.9.3. U. Failed to coordinate with crewmembers/mission personnel. Did not give clear and concise instructions. Failed to utilize resources causing degradation of the mission.

A3.3.10. Area B-10: Communication Procedures.

A3.3.10.1. Q. Radio and intra-crew communications were concise, accurate and effective.

A3.3.10.2. Q- Minor terminology errors or omissions occurred, but did not significantly detract from situational awareness, mutual support or mission accomplishment.

A3.3.10.3. U. Radio or intra-crew communications over primary/secondary radios were inadequate or excessive. Inaccurate or confusing terminology significantly detracted from mutual support, situational awareness or mission accomplishment.

A3.3.11. Area B-11: Knowledge of Directives.

A3.3.11.1. Q. Demonstrated thorough knowledge of SUAS aircraft systems, limitations and performance characteristics.

A3.3.11.2. Q-. Knowledge of SUAS aircraft systems, limitations, and performance characteristics sufficient to perform the mission safely. Demonstrated deficiencies either in depth of knowledge or comprehension.

A3.3.11.3. U. Demonstrated unsatisfactory knowledge of SUAS aircraft systems, limitations or performance characteristics.

A3.4. : SUAS Operator (External) Qualification. (See Attch 2)**A3.5. : SUAS Operator (Internal) and Payload Operator Qualification.**

A3.5.1. May be accomplished in an approved simulator.

A3.5.2. Area D-1: Performance Data.

A3.5.2.1. Q. Accurately computed/reviewed all required takeoff/launch and landing data. Aware of abort considerations, runway condition, weather, impact of weather on mission accomplishment.

A3.5.2.2. Q-. Computed/reviewed required takeoff data with minor omissions or errors which did not detract from mission accomplishment or safety.

A3.5.2.3. U. Major errors or omissions which compromise safety. Faulty or improper knowledge of performance data.

A3.5.3. Area D-2: Preflight Inspection.

A3.5.3.1. Q. Established and adhered to station, engine start, taxi and take-off times to assure thorough preflight, check of personal equipment, crew briefing, etc. Accurately determined readiness of aircraft for flight.

A3.5.3.2. Q-. Minor procedural deviations which did not detract from the overall mission.

A3.5.3.3. U. Major deviations in procedure which would preclude safe mission accomplishment. Failed to accurately determine readiness of aircraft for flight. Crew errors directly contributed to a late takeoff which degraded the mission or made it non-effective.

A3.5.4. Area D-3: Engine Start.

A3.5.4.1. Q. Accomplished engine start IAW flight manual procedures and checklists/test cards.

A3.5.4.2. Q-. Accomplished engine start with significant omissions or deviations from flight manual checklist/test cards procedures that did not affect safety.

A3.5.4.3. U. Omitted required procedures. Deviations to flight manual/test cards which could potentially damage aircraft or mission equipment.

A3.5.5. Area D-4: Taxi and Takeoff/Launch.

A3.5.5.1. Q. Completed all taxi checks correctly in accordance with flight manual and local/test card procedures. Operated aircraft safely. Performed takeoff/launch in accordance with flight manual/test card procedures and techniques.

A3.5.5.2. Q-. Deviated from taxi checks in accordance with flight manual and local/test card procedures. Operated aircraft safely. Deviated from with flight manual/test card procedures and techniques during takeoff/launch.

A3.5.5.3. U. Failed to coordinate with ground crew and safety observer prior to aircraft movement. Failed to adequately monitor taxi route or takeoff operation. Intervention required to prevent damage to aircraft. Takeoff/launch potentially dangerous. Exceeded aircraft systems limitations or would have exceeded aircraft limitations without intervention.

A3.5.6. Area D-5: Climb Procedures.

A3.5.6.1. Q. Climb was IAW the applicable flight manual or mission flight plan/test cards.

A3.5.6.2. Q-. Some under or over-control. Flight manual or mission flight plan/test card deviations significant but did not affect safety of flight or mission accomplishment.

A3.5.6.3. U. Failed to comply with flight manual or mission flight plan/test card procedures. Major deviation affecting safety and mission accomplishment.

A3.5.7. Area D-6: Basic Control.

A3.5.7.1. Q. Monitored basic aircraft control within specified tolerances dictated by the software and mission plan. Promptly reacted to flight deviations as a result of anomalies, contingency reaction triggered by software and aircraft conditions, manual initiated overrides, etc.

A3.5.7.2. Q-. Minor procedural deviations, which did not detract from the overall mission.

A3.5.7.3. U. Failed to anticipate vehicle actions dictated by the software and mission plan. Failed to monitor basic aircraft control. Failed to promptly react to flight deviations.

A3.5.8. Area D-7: Traffic Pattern.

A3.5.8.1. Q. Performed patterns/approaches IAW procedures outlined in the SUAS flight manual, operational procedures and local directives//test cards. Aircraft control was smooth and positive. Accurately aligned with runway. Maintained proper/briefed airspeed/AOA. Airspeed -5/+10 knots.

A3.5.8.2. Q-. Performed patterns/approaches with minor deviations to procedures outlined in the SUAS flight manual, operational procedures and local directives/test cards. Aircraft control was not consistently smooth, but safe. Alignment with runway varied. Slow to correct to proper/briefed airspeed/AOA/ Airspeed -5/+15 knots.

A3.5.8.3. U. Approaches not performed IAW procedures outlined in the SUAS flight manual, operational procedures and local directives/test cards. Erratic aircraft control. Large deviations in runway alignment. Exceeded Q- parameters.

A3.5.9. Area D-8: Go-Around.

A3.5.9.1. Q. Initiated and performed go-around promptly IAW SUAS flight manual and operational procedures and directives/test cards.

A3.5.9.2. Q-. Slow to initiate go-around or procedural steps.

A3.5.9.3. U. Did not self-initiate go-around when appropriate. Techniques unsafe or applied incorrect procedures. Erratic aircraft control. Large deviations in runway alignment.

A3.5.10. Area D-9: Engine-Out Traffic Pattern. Evaluate actions taken in response to actual or simulated emergencies that occur during the flight check (in-flight or on the ground) until the flight examiner declares the evaluation of the emergency procedure terminated.

A3.5.10.1. Q. Performed emergency procedures IAW applicable directives. Used sound judgment. Configured at the appropriate position/altitude. Smooth positive control of aircraft. Able to prioritize actions to safely recover the aircraft. Maintained aircraft control within appropriate standards.

A3.5.10.2. Q-. Performed emergency procedures with minor deviations, omissions, and/or errors from applicable directives. Configured at a position and altitude, which allowed for a safe approach. Minor deviations from procedures and altitudes/unnecessary maneuvering due to minor errors in planning or judgment; however, did not jeopardize the safe recovery of the aircraft.

A3.5.10.3. U. Did not comply with applicable procedures. Erratic airspeed control compounded problems associated with the emergency. Performed emergency procedures with major deviations, omissions, and/or errors from recommended procedures and altitudes. Required excessive maneuvering due to inadequate planning or judgment. Unable to safely recover the aircraft.

A3.5.11. Area D-7: In-flight Planning.

A3.5.11.1. Q. Effectively performed in-flight planning, including changing profile by adding or deleting route segments or collections. Effectively adapted to dynamic changes in mission plan. Demonstrated ability to adjust mission profile to comply with time/fuel limitations, weather, area limits, mission constraints and objectives.

A3.5.11.2. Q-. In-flight planning included minor deviations, which did not compromise safety, or significantly detract from the mission.

A3.5.11.3. U. Unable to re-plan inflight, or adapt to changing mission requirements. Consistently behind the aircraft. Action or inaction compromised safety and successful mission accomplishment.

A3.5.12. Area D-8: Override Commands

A3.5.12.1. Q. Concise operation of override commands including throttle and primary flight control override in response to aircraft or autopilot malfunction simulated by evaluator. Successfully recognized actual or potential conflicts, and adjusted aircraft performance to safely avoid these conflicts.

A3.5.12.2. Q-. Operation of override commands included minor deviations which did not compromise safety or significantly detract from successful mission accomplishment.

A3.5.12.3. U. Improper or inappropriate operation of override commands which compromised safety of significantly detracted from successful mission accomplishment.

A3.5.13. Area D-9: Crosscheck/Division of attention. This area assesses the examinee's ability to properly prioritize and allocate his/her attention to relevant tasks.

A3.5.13.1. Q. Performed proper crosscheck of SUAS aircraft system status (comm and data links, power/fuel, etc) and flight parameters (attitude, altitude, speed, heading) during all phases of flight. Maintained situational awareness as necessary to comply with ATC instructions and mission plan changes.

A3.5.13.2. Q-. Minor deviations in crosscheck which did not compromise safety or significantly detract from successful mission accomplishment.

A3.5.13.3. U. Improper or ineffective crosscheck. Unable to maintain situational awareness. Failed to recognize actual or potential conflicts or system faults.

A3.5.14. Area D-10: Descent, Approach, and Landing. Includes manual and/or GCS command holding, enroute descent and GPS aided approach.

A3.5.14.1. Q. Performed correct procedures and maintained pattern to comply with ATC instructions and procedures. Maintained basic control and position orientation within aircraft performance limitations. Complied with mission plan approach and flight manual standards/test cards.

A3.5.14.2. Q-. Landing accomplished with significant deviations to established procedures but safety was not affected.

A3.5.14.3. U. Failed to monitor landing and ground operations. Incorrect or inappropriate procedures. Unable to maintain position orientation or ATC assigned airspace. Unsafe control inputs jeopardized safety.

A3.5.15. Area D-11: After Landing.

A3.5.15.1. Q. Appropriate after landing checks and aircraft taxi procedures were accomplished.

A3.5.15.2. Q-. Significant deviations or omissions from established procedures but safety and mission effectiveness were not affected.

A3.5.15.3. U. Checks were not accomplished in timely manner. Errors of omission committed without correction.

A3.5.16. Area D-12: Systems Knowledge.

A3.5.16.1. Q. Thorough knowledge of SUAS aircraft systems, limitations, and performance characteristics.

A3.5.16.2. Q-. Knowledge of SUAS aircraft systems, limitation, and performance characteristics sufficient to perform the mission safely. Deficiencies either in depth of knowledge or comprehension.

A3.5.16.3. U. Unfamiliar with systems operation. Unable to recall details, ops limits, or operational processes.

A3.5.17. Area D-13: NAS Rules and Procedures.

A3.5.17.1. Q. Complied with NAS rules/requirements and airspeed restrictions or potential traffic conflicts within NAS.

A3.5.17.2. Q-. Same as above but minor deviations detracted from safe accomplishment of the mission.

A3.5.17.3. U. Unfamiliar with NAS rules and procedures. Unaware of potential traffic conflicts. Did not use appropriate risk mitigating tools.

A3.6. : Instructor. This section is used for INSTR checks to evaluate & grade an individuals' general ability to act in an instructor capacity, as opposed to performing qualification items as in Sections C or D. NOTE: For qualified instructors undergoing a recurring evaluation, the QUAL and INSTR evaluations are normally combined for efficiency.

A3.6.1. Area E-1: Instructional Ability.

A3.6.1.1. Q. Demonstrated ability to communicate effectively. Provided appropriate corrective guidance when necessary.

A3.6.1.2. Q-. Instruction was essentially correct with some deviations or omissions. Problems in communications or analysis did not degrade effectiveness of instructions.

A3.6.1.3. U. Inability to effectively communicate with the student. Did not provide corrective action where necessary. Did not plan ahead or anticipate student problems.

A3.6.2. Area E-2: Briefing/Debriefing.

A3.6.2.1. Q. Briefings were well organized, accurate and thorough. Reviewed student's present level of training and defined mission events to be performed. Excellent ability during critique to reconstruct the flight, offer mission analysis, and provide corrective guidance where appropriate. Completed all training documents in accordance with prescribed directives. Training syllabi reflected actual performance of student relative to standard. Briefed the student's requirements for the next mission.

A3.6.2.2. Q-. Minor errors or omissions in briefing, critique, and/or training documents that did not affect student progress.

A3.6.2.3. U. Briefings were marginal or non-existent. Did not review student's training folder or past performance. Failed to adequately critique student or provide complete mission analysis. Training syllabi grade did not reflect actual performance of student. Comments in training folder were incomplete. Strengths and weaknesses were not identified. Overlooked or omitted major discrepancies. Incomplete briefing of student's training requirements/objectives for mission.

A3.6.3. Area E-3: Demonstration and Performance.

A3.6.3.1. Q. Effectively demonstrated procedures and techniques on the ground and in-flight. Demonstrated thorough knowledge of SUAS aircraft systems, procedures, and all applicable publications and regulations.

A3.6.3.2. Q-. Minor discrepancies in the above criteria that did not affect safety or adversely affect student performance.

A3.6.3.3. U. Did not demonstrate correct procedure or technique. Insufficient knowledge about SUAS aircraft systems, procedures, and/or proper source material.

A3.6.4. Area E-4: Conduct of the Mission.

A3.6.4.1. Q. Executed the assigned mission in a timely, efficient manner. Conducted the flight with a sense of understanding and comprehension.

A3.6.4.2. Q-. Untimely or inappropriate decisions degraded or prevented accomplishment of a portion of the mission. Resources were not effectively used to the extent specific mission objectives were not achieved.

A3.6.4.3. U. Mission execution prevented accomplishment of a major portion of the mission. Undisciplined actions violated training rules repeatedly.

A3.7. : Mission (If applicable). This section is used for MSN checks (not common in AFMC) to evaluate & grade an individuals' general ability to perform a particular type of mission, as opposed to performing qualification items as in Sections C or D.

A3.7.1. Area F-1: Knowledge.

A3.7.1.1. Q. Fully knowledgeable in mission requirements, test plan directives, SUAS limitations, and partial flight manual. Effectively coordinated with other crew members and project personnel.

A3.7.1.2. Q-. Demonstrated a limited knowledge of mission requirements, test plan directives, SUAS limitations, or the partial flight manual which degraded a portion of the mission objective or CRM.

A3.7.1.3. U. Inadequate knowledge of mission requirements, test plan directive, SUAS limitations, and partial flight manual. Did not effectively use resources. Directly affected successful mission accomplishment.

A3.7.2. Area F-2: Planning.

A3.7.2.1. Q. Considered all factors necessary for mission accomplishment to include weather, mission profile, airspace utilization/restrictions, and proper documentation.

A3.7.2.2. Q-. Limited consideration of all factors necessary for mission accomplishment. However, did not affect mission objective directly, but may have contributed toward lack of effective CRM.

A3.7.2.3. U. Did not consider all factors necessary for mission accomplishment. Lack of consideration contributed negatively towards successful mission completion.

A3.7.3. Area F-3: Execution.

A3.7.3.1. Q. Accomplished major mission objectives in a timely and skillful manner.

A3.7.3.2. Q-. Errors or omission were made which did not render mission ineffective, but indicated a definite need for additional training.

A3.7.3.3. U. Improper execution of duties negatively impacted mission accomplishment.

A3.7.4. Area F-4: Security.

A3.7.4.1. Q. Adequate security of mission information and material was maintained throughout preflight, flight, and post flight.

A3.7.4.2. U. Inadequate security procedures were carried out which would lead to the compromise of mission information and/or material.