DEPARTMENT OF THE NAVY
NAVAL POSTGRADUATE SCHOOL
1 UNIVERSITY CIR
MONTEREY, CA 93943-5000

NPSINST 3700.1B
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APR 20 2020

NPS INSTRUCTION 3700.1B

From: President, Naval Postgraduate School

Subj: NAVAL POSTGRADUATE SCHOOL GROUP 1 AND 2 UNMANNED AERIAL SYSTEMS TRAINING AND OPERATIONS

Ref: (a) NAVAIRINST 13034.1F
(b) COMNAVAIRFORINST 3710.9
(c) CNAF M-3710.7
(d) COMNAVAIRFORINST 4790.2C
(e) OPNAVINST 3750.6S
(f) NPSINST 3750.1
(g) OPNAVINST 2400.20F
(h) DoD Instruction 6055.1 of 14 October 2014
(i) OPNAVINST 3500.39D
(j) OPNAVINST 1542.7E
(k) DCMAINST 8210.1C

Encl: (1) NPS Group 1 and 2 UAS Training and Operations Manual

1. Purpose. The purpose of this instruction is to provide policy and procedural guidance for Unmanned Aerial Systems (UAS) operations, including command oversight responsibilities, minimum operator qualifications, and safety reporting requirements at the Naval Postgraduate School (NPS).

2. Cancellation. NPSINST 3700.1A.

3. Applicability. This instruction applies to all military, civilian, and contractor personnel conducting outdoor flight activities utilizing UAS in the NPS inventory or leased by NPS, and these activities shall comply with enclosure (1). Reference (a) specifies that air vehicles weighing less than five pounds do not require a flight clearance while conducting indoor flights as long as there is no potential for open-air flight. However, indoor flight operations shall comply with all applicable portions of this instruction.

4. Background.

a. Reference (b) provides Department of the Navy (DoN) guidance on program of record and non-program of record Group 1 and 2 UAS. Aircraft reporting custodian responsibilities can be found in references (c) through (e). References (f) through (k) describe various safety and risk mitigation reports and procedures. Reference (l) describes contractor responsibilities.

b. The objective of this instruction is to ensure the NPS aviation program conforms to DoN guidance and policy while providing the maximum possible research flexibility to NPS faculty.

5. Action. All personnel conducting flight operations utilizing UAS shall comply with the requirement and procedures set forth in enclosure (1).

6. Records Management. Records created as a result of this notice regardless of media or format, must be managed per SECNAV Manual 5210.1 of January 2012

7. Review and Effective Date. Per OPNAVINST 5215.17A, Naval Postgraduate School will review this instruction annually around the anniversary of its issuance date to ensure applicability, currency, and consistency with Federal, Department of Defense, Secretary of the Navy, and Navy policy and statutory authority using OPNAV 5215/40 Review of Instruction. This instruction will be in effect for 10 years, unless revised or cancelled in the interim, and will be reissued by the 10-year anniversary date if it is still required, unless it meets one of the exceptions in OPNAVINST 5215.17A, paragraph 9. Otherwise, if the instruction is no longer required, it will be processed for cancellation as soon as the need for cancellation is known following the guidance in OPNAV Manual 5215.1 of May 2016.

ANN E. RONDEAU, Ed.D
Vice Admiral, U.S. Navy (Ret.)

Releasability and distribution:
This instruction is cleared for public release and is available electronically only via http://intranet.nps.edu/Code00/Instructions/IndexNew.html

NAVAL POSTGRADUATE SCHOOL GROUP 1 AND 2 UAS TRAINING AND OPERATIONS MANUAL

Table of Contents

CHAPTER 1: ADMINISTRATION AND ORGANIZATION

1. Purpose

This instruction prescribes general flight and operating instructions and procedures applicable to the operation of NPS UAS. This instruction cannot cover every contingency that may arise nor every rule of safety and good practice. To achieve maximum value, the contents of all references must be studied and understood. Where guidance does not exist, operators shall utilize sound judgment, take the most conservative approach, err on the side of safety, etc.

2. Scope

This instruction applies to all military, civilian, and contractor personnel conducting outdoor flight activities utilizing UAS in the NPS inventory or leased by NPS.

3. Organization, Assignments, and Responsibilities

a. NPS President. Per reference (b), the NPS President is the Designated Approval Authority (DAA) and is responsible for exercising administrative control of assignment, employment, and logistic support of Group 1 and 2 UAS under their cognizance. All other duties and responsibilities associated with the conduct of NPS' aviation program are specified in reference (c).

b. Assistant Chief of Staff for Aviation Activities (ACOS-AA)

(1) The ACOS-AA acts on behalf of the NPS President to review and approve all NPS aviation activities to include accepting aircraft into the NPS inventory, approving flight schedules, responding to official requests of external agencies and commands, and signing operator designation letters. In this capacity, the ACOS-AA shall report directly to the NPS President on the safety, compliance, and status of the NPS Aviation Program.

(2) Serves as the DAA Point of Contact (PoC) and Aircraft Reporting Custodian (ARC) for all Group 1 and 2 UAS.

(3) The principle duties associated with this position are coordinating amongst internal NPS groups and external Navy, Department of Defense (DoD), and Department of Transportation agencies.

(4) Designate individuals for establishing an FAA CAPS account.

c. Aviation Operations Officer (OPSO)

(1) The OPSO manages the daily operations of the NPS Aviation Program and reports directly to the ACOS-AA. Duties include generating and disseminating flight schedules, conducting spot inspections of operator training records, liaising with NAVAIR AIRWorks and CNAF on policies governing UAS operations, and assigning NPS individual numbers (NINOs) to newly acquired UAS.

(2) Serve as the ARC PoC for all Group 1 and 2 UAS.

(3) Provide periodic reports, as required, to external agencies.

(4) Coordinate with Department of the Navy Representative (NAVREP), Federal Aviation Administration Western Service Area on airspace utilization requests and policies. In this capacity, serve as the primary PoC for submission of Certificates of Waiver or Authorization (COA) requests via FAA CAPS web site.

(5) Serve as the Training Petty Officer's Division Officer.

(6) Serve as the Aviation Safety Officer (ASO) if this billet is vacant. Every reasonable option will be explored to avoid this circumstance.

d. Aviation Safety Officer (ASO)

(1) The Safety Officer reports to the ACOS-AA for routine, daily matters. However, the ASO can report directly to the NPS President on urgent or critical safety matters.

(2) Conduct safety training and spot inspections. This training includes the Senior Watch Officer, who is responsible for Command Duty Officer (CDO)/Officer of the Day (OOD) watch standing performance.

(3) Liaise with Naval Support Activity Monterey Safety Department on other safety programs that include battery safety, hazardous material safety, and Navy Occupational Safety and Health policies.

(4) Liaise with Presidio of Monterey medical on flight medicine topics, to include periodic health assessments for operators.

e. Training Petty Officer

(1) Serve as the primary PoC for records management. Duties include managing the operator personnel qualification standard program, which consists of core qualification, position specific qualifications, system specific qualifications, and location specific qualifications.

(2) Liaise with command admin on the staffing of designation letters for signature.

(a) Liaise with NPS Information Technology and Communication Services for web-based solutions to archive signed designation letters and other program records.

4. Internal NPS Relationships

a. Dean of Research (DoR). The DoR is charged with overseeing sponsored program activities across the NPS campus.

b. The DoR designates the Associate Dean of Research (ADoR) to be

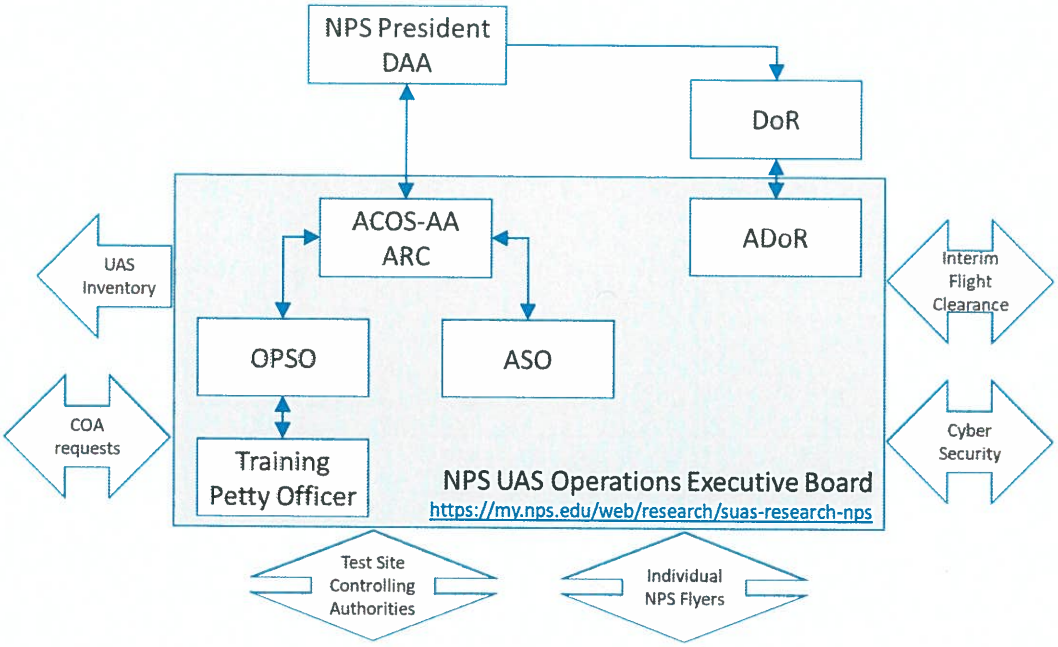
(1) A single PoC for the current and potential new UAS flyers at all Schools and Departments to enable effective execution of UAS-related sponsored program activities.

(2) A PoC for NAVAIR AIRWorks and NAVAIR UAS Cybersecurity Board.

(3) A PoC at NPS for the Controlling Authorities of the UAS Test Sites used by NPS flyers, providing these Controlling Authorities with all required documentation for uninterrupted execution of UAS-related activities supporting NPS mission and ensuring compliance with these test sites regulations.

(4) Ensure compliance with all DoD, DoN and Federal Aviation Administration (FAA) constraints and regulations, including obtaining Interim Flight Clearances and Cybersecurity Waivers for all NPS UAS users.

c. The DoR has established the NPS UAS Operations Executive Board that consists of ADoR, ACOS-AA, OPSO, ASO, and Training Petty Officer as the ultimate authority to address and resolve all arising issues. NPS UAS Operations Executive Board has established UAS Research at https://my.nps.edu/web/research/suas-research-nps, providing full and most current UAS-related information.



d. CDO/OOD

(1) The CDO responsibility is to execute the Aviation Pre-Mishap Plan, if necessary.

(2) When operating UAS at one of the authorized COAs, the Safety Observer, as identified on the approved NPS Flight Schedule is responsible for notifying the CDO at the beginning and end of flight operations. Calls are not necessary if there is a break of 59 minutes or less between events.

(3) UAS operations at the NPS Field Laboratory at McMillan Airfield (NPS-FL MAF) assume compliance with NPS-FL MAF Flight Operations Procedure (https://nps01.sharepoint.com/:w:/r/sites/academics/research/adr/_layouts/15/Doc.aspx?sourcedoc=%7B1E44912E-AFE8-4514-99DB-834BE5AF6EA8%7D&file=NPS-FL%20MAF%20Flight%20Operations%20Procedures%20Guide.docx&action=default&mobileredirect=true) and are handled by NPS-FL MAF Site Manager and designated Air Boss. CDO does not need to be notified at the beginning and end of flight operations.

5. External Relationships

a. Commander, Naval Air Forces (N45). Reference (b) establishes NPS' relationship with Commander, Naval Air Forces for the operation of Department of the Navy Group 1 and 2 UAS.

b. Department of the Navy Representative (NAVREP), Federal Aviation Administration Western Service Area. Serves as the NPS PoC for FAA policy on operating UAS in civil airspace and FAA CAPS account management.

CHAPTER 2: OPERATIONS

1. Scope

These operational procedures apply to all NPS air assets except contracted operations approved by a government flight representative.

2. Policy

Authorized operation of NPS aerial systems requires their acceptance into the NPS aircraft inventory, a NAVAIRSYSCOM issued interim flight clearance per reference (b), NPS flight release, and authorization for flight per reference (a). In addition, operation of naval aircraft by a contractor requires flight approval by a designated government flight representative.

3. Flight Authorizations

a. Flight authorizations for NPS aircraft are issued under the authority of the NPS President acting through the ACOS-AA.

b. A flight schedule is required for all flight operations in which a NPS faculty member operates a UAS contained in NPS' inventory. An NPS flight schedule may be generated to document a faculty member's operation of another organization's UAS in order to document operational experience or currency.

(1) Flight authorization is permission to operate a naval aerial system, flying a specific mission or series of missions.

(2) Flight authorizations are issued for a specified number of flights, duration, missions, and crew. Additional flights or extended duration requires modification or reissue of the authorization.

(3) NPS personnel shall request flight authorization from the ACOS-AA via the OPSO. Requests shall include the following, utilizing appendix A:

(a) Date and Time of event (no more than 5 consecutive days).

(b) Type/Model/Series of aircraft.

(c) UAS Mission Commander (UMC).

(d) Location.

(e) Event description.

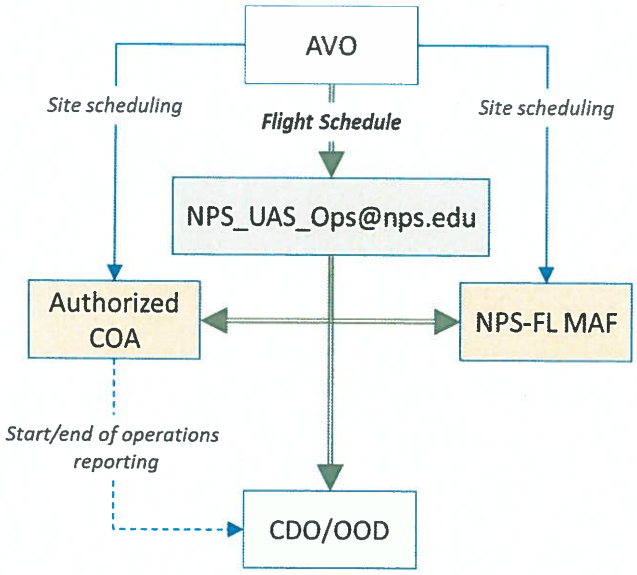
(f) NINOs.

(g) Name(s) of Air Vehicle Operator(s) (AVOs).

(h) Name(s) of Safety Observer(s).

(4) Flight approvals will be propagated via a signed NPS flight schedule.

(5) All signed flight schedules will be provided to CDO and AVO (who needs to submit it with other required documents to NPS-FL MAF Site Manager in the case of operations at Camp Roberts).



4. Standard Operating Procedure

a. Detailed UAS operations are covered in the Standard Operating Procedure (SOP) for NPS (Non-Program of Record) Multirotor and Fixed-Wing UAS up to 55 pounds MGTOW available at https://my.nps.edu/documents/103449465/112525310/J03+-+NPS+Group+1+and+2+Multi-Rotor+and+Fixed-Wing+SOP+V1.3.pdf (alternatively, start at https://my.nps.edu/web/research/suas-research-nps, choose Flight Clearance (requires log in with NPS credentials) and proceed to appendix (2)).

b. NPS SOP, covers operations of all NPS electrically-powered multirotor and fixed-wing UAS up to 55 pounds, is part of the NAVAIR-AIRWorks-approved blanket Category 3 IFC for Group 1 and Group 2 multi-rotor UAS and the blanket Category 3 IFC for Group 1 and Group 2 and fixed-wing UAS.

c. When operating at NPS Field Laboratory at McMillan Airfield, adhere to the McMillan Airfield Flight Operations Procedure Guide available at https://nps01.sharepoint.com/:w:/r/sites/academics/research/adr/_layouts/15/Doc.aspx?sourcedoc=%7B1E44912E-AFE8-4514-99DB-834BE5AF6EA8%7D&file=NPS-FL%20MAF%20Flight%20Operations%20Procedures%20Guide.docx&action=default&mobileredirect=true&cid=35e4baed-37f1-4b4c-8e01-dd34797cc273 (alternatively, start at https://my.nps.edu/web/research/suas-research-nps, choose Test Sites and then McMillan Airfield on the right; the link to Guide can be found in item 7)

5. Flight Locations

a. NPS Field Laboratory at McMillan Airfield

(1) Flight operations are typically carried out in R-2504, which is located in Camp Roberts Air National Guard base in Paso Robles, California. The only paved runway within the boundary of the restricted airspace is McMillan Airfield in the southwest quadrant of the base. The airspace is over unpopulated/sparsely populated terrain.

(2) R-2504 is approximately 5 by 9.5 miles and is from the surface to 15,000 feet MSL.

(a) NPS maintains a field laboratory at Camp Roberts and during certain flight events assigns a person to act as the "Air Boss." Their authority on the conduct of flight operations is absolute.

(3) Navy Auxiliary Landing Field San Clemente Island

b. Flight operations are typically coordinated with Fleet Area Control and Surveillance Facility (FACSFAC) San Diego, which provides off-shore air traffic control and surveillance as well as active management of assigned airspace, operating areas, ranges, and training resources off the coast of San Diego and San Francisco.

c. Extreme caution must be utilized when operating at San Clemente due to the close proximity of operational units.

(1) Other Military Locations. Flight operations may be conducted at any number of other military bases, to include Naval Air Weapons Station China Lake. These locations likely have airspace control plans, documents that prescribe standard operating procedures and local reporting requirements, etc. All personnel fulfilling a flight operation position must be familiar and comply with these documents.

(2) Impossible City, Fort Ord (also known as Military Operations on Urban Terrain (MOUT))

(a) The lateral limits of MOUT airspace is defined as a 500-foot radius centered at N36° 37' 10.38 and W121° 44' 55.61 up to 1,000 feet MSL.

(b) This airspace is just within the extreme edge of Monterey Airport's Class C airspace. The airport is located 5 miles to the southwest (234 degrees).

(3) Carmel River State Beach

(a) This airspace is located at the Carmel River Beach.

1. Launch Point: N36° 32' 18.1 W121° 55' 42.3

2. Area: 0.18 DME radius half-circle centered at the launch point.

3. Flights will be conducted in daylight hours at 10 knots or less and 400 feet AGL and below due to operating area abutting Monterey Airport Class C airspace.

4. A California state park permit is necessary for flight operations at this location.

(4) Other Non-Military Locations. Flight operations may be conducted at any number of non-military locations. Request to operate in civil airspace will be requested via FAA CAPS. These locations likely do not have airspace control plans, documents that prescribe standard operating procedures or local reporting requirements, etc. However, there may be local permits and approvals required to utilize. The UMC is responsible for ensuring all of these requirements are met and all required operating instructions are followed.

(5) Shipboard Operations. Operating from a vessel at-sea presents a unique set of challenges compared to land-based operations. The maritime vessel should always be considered in motion, due to factors that include wind, waves, swell, and tidal currents. How the vessel moves depends on the vessel's characteristics (size, hull shape, etc.) and the environmental conditions. Additional considerations may include any of the following:

(a) Metal structures in vessels can affect the magnetic compass on small UAS.

(b) A vessel may have any number of obstruction hazards such as the superstructure, cranes, and nets.

(c) Ship decks can be busy areas, with multiple operations occurring simultaneously.

(d) A vessel may have a variety of electromagnetic emissions (radars, communication systems, etc.) that could affect command and control systems and/or payload operations.

(e) Weather conditions are often more variable at-sea than ashore.

6. Aerial Systems

a. Group 1 UAS

(1) Group 1 UAS are defined as systems whose maximum gross take-off weight is 0-20 pounds, operates at less than 1,200 feet AGL, and maximum speed 100 knots.

(2) NPS UAS in this group include DJI Inspire 1, DJI Inspire 1 Pro, DJI Phantom 3, DJI Phantom 4, DJI Matric 100, DJI Matric 600, Copter-Stat 350/450, Copter-Stat Mini Talon, Humming bird, InstantEye, Kadet, Mentor, Pelican, Penguin, Rascal 110, Rotomotion SR20, 3DR Solo, Storm SRD240X, Swarm Quad-copter, Taxi 2400, TalAUS, Unicorn, and Zephyr II.

b. Group 2 UAS

(1) Group 2 UAS are defined as systems whose maximum gross take-off weight is 21-55 pounds, operates at less than 3,500 feet AGL, and maximum speed 250 knots.

(2) NPS UAS in this group include ScanEagle.

c. Group 3, 4, and 5 UAS

(1) Group 3 and larger systems are generally described as systems whose operating parameters exceed those of Group 2 systems.

(2) NPS typically does not operate these systems.

7. Events

NPS operators participate in named events such as JIFX. They may also include operators from various DoD organizations, government entities, civilian academic institutions, or commercial companies. NPS operators and these organizations may have differing requirements to participate in the event. NPS operators must complete these requirements and gain approval to

fly on a NPS flight schedule. All reporting requirements, applicable event briefs, airspace control measures, etc. must be followed.

8. Flight Rules

a. Night Operations

(1) All night flight operations shall be annotated on the flight schedule.

(2) Operations not approved for night operations shall not takeoff before sunrise and shall land prior to sunset.

b. Instrument Meteorological Conditions (IMC). Intentional operations in IMC are not authorized; all flights shall operate in Visual Meteorological Conditions (VMC).

c. Range Operations. UMCs shall adhere to all range regulations. All NPS UAS capable of an electronic fence shall maintain a minimum 300 feet buffer inside the actual airspace boundary. UMCs may specify a more restrictive buffer in their operational brief. Breaking the electronic boundary shall initiate immediate corrective action to return the UAS to the operating area. The Safety Observer may direct an immediate cessation of the mission and return to base.

d. Swarm

(1) Swarm flight operations are defined as two or more UAS acting in coordination with each other.

(2) All swarm flights shall be annotated on the NPS flight schedule.

e. Aerobatic Flight

(1) Aerobatics shall not be performed unless required for training, operational exercises, mission requirements, or test or evaluation of operational design.

(2) All aerobatic flights shall be annotated on the NPS flight schedule.

f. Reckless Flying

(1) UMCs will ensure the aircraft is not operated in a careless or irresponsible manner that could endanger life or property.

(1) UAS will not be used to conduct flights for personal use.

9. UAS Operations

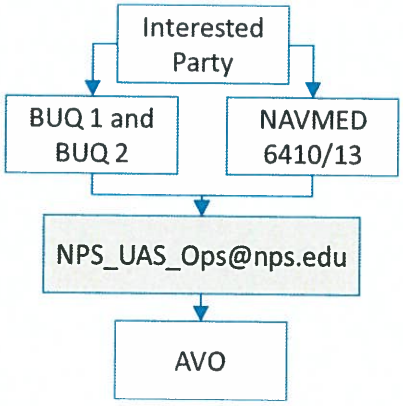
a. Detailed UAS operations are covered in the Standard Operating Procedure (SOP) for NPS (Non-Program of Record) Multirotor and Fixed-Wing UAS up to 55 pounds MGTOW available at https://my.nps.edu/documents/103449465/112525310/J03+-+NPS+Group+1+and+2+Multi-Rotor+and+Fixed-Wing+SOP+V1.3.pdf

b. NPS SOP, covers operations of all NPS electrically-powered multirotor and fixed-wing UAS up to 55 pounds, is part of the NAVAIR-AIRWorks-approved blanket Category 3 IFC for Group 1 and Group 2 multi-rotor UAS and the blanket Category 3 IFC for Group 1 and Group 2 and fixed-wing UAS.

CHAPTER 3: TRAINING

1. Scope

a. In accordance with reference (b), the ARC is authorized to approve UAS crew qualifications and certifications after ensuring each UAS crewmember has completed the requisite training for the applicable crewmember classification. UAS crewmember classifications are provided in reference (c), chapter 14, subparagraph 14.12. ARCs must issue a written designation letter, utilizing appendix B, to each qualified individual upon their designation. Copies of each designation letter are retained in the individual crewmember's electronic training jacket.



b. The training and medical requirements shall only apply to NPS faculty, research associates, etc. Unless explicitly required by Navy policy or operational requirements, students involved in flight operations directly related to coursework are not required to complete Personnel Qualification System (PQS) training or medical assessments.

2. Personnel Qualification System

a. Core Requirements. All operators of the government-owned UAS must complete these training qualifications and be designated in writing by the ACOS-AA prior to performing any flight operations.

(1) Review this instruction and reference (f)

(2) Basic UAS Qualification 1 and 2 (BUQ 1 and 2). This training can be found on the Joint Knowledge Online web site at http://jko.jten.mil. Search "basic unmanned aerial systems qualification."

(3) Federal Aviation Administration Remote Pilot license is not required.

b. Platform-Specific Requirements. It is impractical, if not impossible, to specify all potential platform-specific training requirements. These requirements will be verified by the OPSO, as specified in Chapter 2, subparagraph 3b(1) of this instruction.

c. Location-Specific Requirements. Per reference (b), "UAS crew must be trained in procedures applicable to the airspace in which they will operate." It is not possible to list every conceivable site that could host NPS UAS operations. Therefore, it is incumbent on each operator and safety observer to perform due diligence in understanding the airspace in which they will operate. Locations that include Camp Roberts and Navy Auxiliary Landing Field San Clemente have airspace control plans that specify local operating procedures. These plans coordinate, integrate, and regulate airspace to increase operational effectiveness. They do not replace DoN flight operations regulations. Additionally, a location may have local reporting requirements that cover aspects of flight operations that includes accidents and beginning and ending of flight operations. The UMC is responsible for ensuring all local reporting requirements are completed.

d. Event-Specific Requirements. If UAS operations are conducted in a named event such as JIFX, every positional authority, such as UMC, AVO, Mission Payload Operator, and Safety Observer, shall be present at every applicable operations and safety brief. For example, if the event includes an all-flyers brief prior to the first flight event, all designated operators, leads, etc., must attend. If daily session update briefs are given on subsequent days, only those designated personnel involved on that day need attend the brief.

3. Medical

Reference (b) prescribes medical requirements.

a. NPS faculty, research associates, etc., flying Group 1 and/or Group 2 UAS require appendix C from a qualified medical provider. Approval from a flight doctor neither substitute it nor required.

b. Medical requirements for contractors are described in reference (k).

CHAPTER 4: SAFETY

1. Scope

This instruction is not intended to cover every contingency that may arise nor every rule of safety and good practice. If at any time during UAS flight operations the Flight Safety Officer or UMC encounters an unsafe condition, the flight shall be expeditiously terminated in a safe manner.

2. Pre-Mishap Plan

All mishaps and hazards shall be handled in accordance with the Aviation Pre-Mishap Plan, reference (f).

3. Mishaps and Hazards

Operations of UAS, both remotely-operated and autonomous, may result in mishaps and hazards.

a. UAS Mishap. An unplanned event that results in a harmful outcome; e.g. death, injury, occupational illness, or major damage to or loss of property.

b. UAS Hazard. A near miss with minor consequences that could have resulted in greater loss. Examples of incidents include midair collision when experimenting with UAS swarms, crash due to autopilot or motor malfunction, crash due to loss of control, communications, or global positioning system, hard landing because of a ground effect, downwash during descent, wind gust at landing, and battery malfunction. For NPS UAS operations, the minor damage or loss of property is determined as being less than $20,000 which equals the Class D reporting threshold.

4. Reporting of UAS Accidents and Incidents

The UMC shall immediately terminate flight operations if a mishap occurs.

a. Mishap Reporting

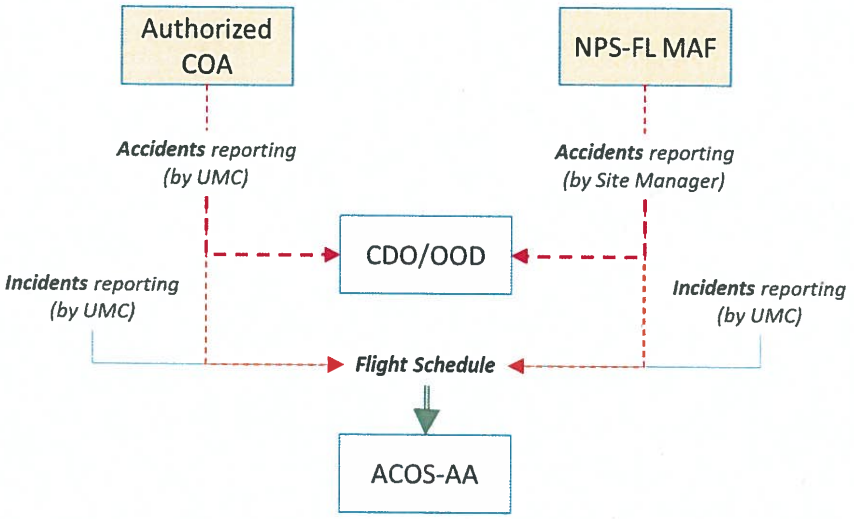
(1) In the case of a mishap during NPS UAS operations at one of the COAs, UMC shall initiate the Aviation Pre-Mishap Plan and immediately report the mishap to CDO/OOD. Mishap details are documented on the last page of the approved Flight Schedule, utilizing appendix A, which must be returned to ACOS-AA. In the case of the UAS damage beyond repair, UMC requests to remove the damaged UAS from the NPS Inventory List.

(2) In the case of UAS operations at NPSFL MAF, the Site Manager is responsible for reporting and handling all incidents involving NPS owned and non-NPS owned UAS. Depending on the severity, NPSFL MAF Site Manager reports about NPS-owned incidents to CDO/OOD either the same day or at the end of JIFX event. UMC annotates the approved Flight Schedule and returns it to ACOS-AA no later than within three days of an incident. In the case of the UAS damage beyond repair, UMC requests to remove the damaged UAS from the NPS Inventory List.

b. Hazard Reporting

(1) In the case of the NPS UAS operations at one of the COAs, UMC documents the circumstances of the hazard on the last page of the approved Flight Schedule, which should be returned to ACOS-AA within a week.

(2) In the case of UAS operations at NPSFL MAF, neither NPSFL MAF Site Manager nor UMC needs to notify CDO/OOD. UMC documents the circumstances of the hazard on the last page of the approved Flight Schedule, which should be returned to ACOS-AA within a week.



5. Flight Operations

Changes in the configuration, equipment or operation of the aerial system, including Ground Control Station(s) (if any), may require revisions to or reissue of some or all of the below documents.

a. Flight Waiver. An authorization to fly the UAS until a specified condition is met, typically a number of flight hours.

b. Interim Flight Clearance (IFC). An IFC provides temporary flight authorizations for aerial systems operating in non-standard configurations, envelopes, or conditions. The IFC is valid until the specific expiration date or other conditions specified in the IFC are met.

c. Additional Safety Requirements

(1) Spectrum Management

(a) Reference (g) provides guidance on electromagnetic spectrum supportability policy and procedures. Guidance can also be received from the Navy Marine Corps Spectrum Center (navyspectrum.fct@navy.mil). Additionally, the FAA NAVREP can be consulted for the most current references and sources of information on this subject.

(b) UAS that are FCC Part 15 compliant require coordination and approval from local spectrum office. Email correspondence is acceptable proof of approval.

(c) UAS that are not FCC Part 15 compliant require the operator to submit a DD1494 and receive a JS12 approval document.

(2) Battery Safety

(a) All NPS aircraft utilizing batteries containing lithium shall receive a Naval Ordnance Safety and Security Activity (NOSSA) battery certification prior to receiving a flight clearance.

(b) Battery certification is issued for each type of battery and configuration. Multiple UAS may use the same battery certification as long as they are using the same model and configuration of batteries.

(c) The NPS Electrical Safety Officer shall maintain and track the certification of all lithium batteries used within the NPS aviation program.

(3) Hazardous Materials. Composite materials, when burned or their material integrity is compromised, can represent a hazard.

6. Operational Risk Management

a. Reference (i) mandates the use of Operational Risk Management (ORM) in the planning and execution of all military training. Reference (j) further directs all Navy activities to apply ORM in planning operations and training to optimize operational capabilities and readiness.

b. UMCs shall use DA Form 7566 (or suitable substitute, typically provided by the range authority) to complete a deliberate ORM process for the intended UAS operations. Any unmitigated Risk Assessment Code of a 1 (critical risk) or 2 (serious risk) shall be annotated on the flight schedule along with an explanation of the high-risk activity. A discussion between the UMC, OPSO, and ACOS-AA may be necessary to gain approval for the flight operation.

7. Crew Resource Management

Reference (k) implements the Navy's CRM program. The UMC is responsible for conducting their flight operations in accordance with the tenets of CRM.

CURRENT DESIGNATIONS/ASSIGNMENTS/CONTACT INFO:

DAA:	NPS President, VADM (ret) Ann E. Rondeau	
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Training Petty Officer:	TBD	
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Giles, Kathleen (Katy)	SE Department
Metcalf, Jeremy	PH Department
Mullins, Steven (Steve)	IS Department
Orescanin, Mara	OC Department
Yakimenko, Oleg	SE Department

ABBREVIATIONS

ACOS-AA	Assistant Chief of Staff for Aviation Activities
ADoR	Associate Dean of Research
ARC	Aircraft Reporting Custodian
ASO	Aviation Safety Officer
AVO	Air Vehicle Operator
BUQ	Basic UAS Qualification
CDO/OOD	Command Duty Officer/Officer of the Day
CRM	Crew Resource Management
DAA	Designated Approval Authority
DOD	Department of Defense
DoN	Department of the NAVY
FACSFAC	Fleet Area Control and Surveillance Facility
IFC	Interim Flight Clearance
IMC	Instrument Meteorological Conditions
JIFX	Joint Interagency Field Experiment
MOUT	Military Operations on Urban Terrain
NAVREP	Department of the Navy Representative
NINO	NPS Individual Number
NOSSA	Naval Ordnance Safety and Security Activity
NPS-FL MAF	NPS Field Laboratory at McMillan Airfield
OPSO	Aviation Operations Officer
ORM	Operational Risk Management
PoC	Point of Contact
PQS	Personnel Qualification System
UAS	Unmanned Aerial System
UMC	UAS Mission Commander
VMC	Visual Meteorological Conditions

APPENDIX A

NPS UAS Flight Schedule Template

NPS PRESIDENT

ACOS-AVIATION ACTIVITIES

Date & Time (no more than 5 consecutive days)	T/M/S	UAS Mission Commander (UMC)	Location	TMR TOT
(additional space provided on next page)				

UAS replacement cost: ☐ <$20K | ☐ >$20K **Expected number of sorties (total):** _____

NOTES

1. Event description:

2. NPS Inventory Number (NINO) - additional space provided on next page:

3. UAS crewmembers:
   - Air Vehicle Operator (AVO) / GCS Operator: _____
   - Safety Observer (OBS): _____

4. If operating at NPS approved COAs, contact NPS CDO at **831-901-6649** at start and completion of flight operations or if required per NPS 3700. If operating at Camp Roberts, abide by NPS McMillian Flying Lab Requirements—no phone call to NPS CDO is required.

---------- For Approving Officials ----------

Risk Assessment: ☐ Low Risk | ☐ Medium Risk | ☐ High Risk | ☐ Extremely High Risk

AVO Certification: ☐

Inventory List Currency: ☐

TFR Compliance: ☐

Recommended By:

Name: _____
NPS AVIATION OPERATIONS

Approved By: (By Direction)

Name: _____
NPS ACOS-AVIATION ACTIVITIES

Additional Information (if required):

Date & Time (no more than 5 consecutive days)	**T/M/S**	**UAS Mission Commander (UMC)**	**Location**	**TMR TOT**

Additional NINOs (if needed):

If your UAS was damaged beyond repair and you want to remove it from the NPS Inventory list, enter your circumstances here and return this form to NPS_UAS_Ops@nps.edu.

APPENDIX B

AIR VEHICLE OPERATOR DESIGNATION LETTER TEMPLATE

NAVAL POSTGRADUATE SCHOOL
1 University Circle
Monterey, CA 93943

3710
ACOS-AA
DATE

From: Naval Postgraduate School Aircraft Reporting Custodian (ARC) for Non-Program of Record (Non-POR) Unmanned Aerial Systems (UAS) Operations

To: _____

Subj: DESIGNATION AS AIR VEHICLE OPERATOR

Ref: (a) CNAF M-3710.7
(b) COMNAVAIRFORINST 3710.9
(c) NPSINST 3750. IA
(d) NPSINST 3700. IB

Provisional Qualification

l. Having completed all prerequisites, required reading, training courses, and knowledge requirements, you are provisionally designated as a Naval Postgraduate School (NPS) air vehicle operation (AVO).

2. You are directed to familiarize yourself with references (a) through (d). Additionally, you shall comply with all UAS-related documents and directives relevant to the airspace in which you operate, along with being trained in applicable procedures for the airspace.

NAME:_____
ARC

DATE

Final Qualification

l . Having completed the practical factors for NPS Group I and Group 2 type/model/series (T/M/S) I-JAS as defined by reference (a), you are hereby designated as a NPS AVO.

NAME:_____
ARC

Copy to:
ADoR

APPENDIX C

APR 20 2020

Unmanned Aerial System (UAS) Physical Worksheet

Groups 1 and 2: Examined by Qualified Medical Provider, Waiver approved by Commanding Officer (CO) locally Groups 3, 4, and 5: Examined by Qualified Aeromedical Officer (AMO), submit to Naval Aeromedical Institute (NAMI)

Patient Name:	Aeromedical Electronic Resource Office (AERO) ID#:	Pass	Fail
1. General Duty physical requirements: Must meet ALL General Duty Standards, as noted in MANMED Chapter 15, Section III. If any disqualifying condition(s) exist, requires notation in Block 9 and AMO review.		○	○
2. Visual Acuity: Must be corrected to 20/20, passing any one of the following two tests: a. Armed Forces Vision Tester (AFVT): at least 7/10 on 20/20 line b. Sloan Crowded Letter Chart (Good-lite): at least 7/10 on the 20/20 line		○	○
3. Color vision: Must pass any one of the following two tests: a. Pseudolsochromatic Plates (PIP): 12/14 correct or better b. Computer-based Color Vision Testing (CBCVT): passing grade		○	○
4. Oculomotor Balance: Must pass all of the following tests: a. Eso/exophoria must be less than 6.0 diopters b. Hyperphoria must be less than 1.5 diopters c. No tropia or diplopia in any direction of gaze		○	○
5. Field of Vision: Must be grossly full.		○	○
6. Depth Perception: Only stereopsis is tested. Must pass any one of the following three tests: a. AFVT: at least A-D completed with no errors b. Stereo booklet (Titmus Fly or Randot): 40 arc second circles c. Verhoff: 8/8 correct on first trial; or if any are missed, 16/16 on the combined second and third trials		○	○
7. Intraocular Pressure: Must pass all of the following tests: a. IntraOcular Pressure (IOP) less than or equal to 22 mmHg OU b. Less than 5 mmHg difference between eyes (5 mmHg or greater difference requires Ophthalmology clearance for waiver)		○	○
8. Read Aloud Test: "Banana Oil" read aloud with no impediments (per MANMED Chapter 15)		○	○
9. Disqualifying Conditions: **Waiver Recommended (WR) or Waiver Not Recommended (WNR)**		WR	WNR
a. _____		○	○
b. _____		○	○
c. _____		○	○
d.		○	○

10. UAS Groups 1 and 2:
- ○ Qualified
- ○ Not qualified, Local Waiver Granted By:
- ○ Not qualified, Local Waiver Denied By:

11. UAS Groups 3, 4, and 5. Must be submitted to NAMI via AERO with electronic Physical and AMS.
- ○ Qualified
- ○ Not qualified, Waiver Recommended by AMO
- ○ Not qualified, Waiver NOT Recommended by AMO

Medical Provider Signature:	Aeromedical Officer Signature (required for Group 3-5):
Printed Name & Date:	Printed Name & Date:

NAVMED 6410/13 (11-2016)