



DEPARTMENT OF THE NAVY

NAVAL POSTGRADUATE SCHOOL
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NPSINST 3700.1A
011AA
24 Jun 13

NPS INSTRUCTION 3700.1A

Subj: NAVAL POSTGRADUATE SCHOOL AIRCRAFT SYSTEMS TRAINING
AND OPERATING PROCEDURES

Ref: (a) OPNAVINST 3710.7U
(b) NAVAIRINST 13034.1D
(c) NAVAIRINST 3710.1F
(d) NPSINST 3750.1

Encl: (1) NPS Unmanned Aircraft Systems Training and
Operating Procedures
(2) SOP Template
(3) UAS PQS
(4) NPS form 644-C
(5) DA Form 7566

1. Purpose. To issue policy and procedural guidance for Naval Postgraduate School (NPS) Manned and Unmanned Aircraft Systems (UAS) training and operation procedures. This is a complete revision and should be reviewed in its entirety.

2. Cancellation. NPSINST 3700.1

3. Background. In accordance with reference (a), the NPS UAS Training and Operating Procedures establish processes to accept a UAS into the NPS inventory, acquire a flight clearance from NAVAIRSYSCOM, and operate safely.

4. Changes. Proposed changes or updates to this instruction shall be forwarded to the NPS Aviation Operations and Safety Officer.


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24 Jun 13

NAVAL POSTGRADUATE SCHOOL AIRCRAFT
SYSTEMS TRAINING AND OPERATING PROCEDURES

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CHAPTER 1

NAVAL POSTGRADUATE SCHOOL UNMANNED AIRCRAFT PROGRAMS

1. Purpose. This instruction prescribes general flight and operating instructions and procedures applicable to the operation of NPS UAS and manned aircraft. This instruction is not intended to cover every contingency that may arise nor every rule of safety and good practice. To achieve maximum value, the contents of all directives cited must be studied and understood.

2. Scope. This instruction applies to all manned and unmanned air vehicles and aircraft systems owned, leased by NPS. This includes, but is not limited to all systems in-service and under development.

3. Organization, Assignments and Responsibilities

a. 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, official requests of outside agencies and commands, and establishment of aviation programs. 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) The principal duty associated with this position is coordinating amongst internal NPS groups and external Navy, Department of Defense (DoD) and Department of Transportation agencies and acting as the Aircraft Reporting Custodian (ARC) for remotely piloted vehicles not owned by the Center for Interdisciplinary Remotely Piloted Aircraft Studies (CIRPAS).

(3) Shall Identify a UAS model manager for each group of UAS. A single individual may serve as the model manager for more than one group of UAS.

b. Aviation Operations/Safety Officer (OPS/ASO). The OPS/ASO officer manages the daily operations and safety of the NPS aviation program and reports directly to the ACOS-AA. Duties include generating flight schedules, conducting safety training and spot inspections, liaising with NAVAIRSYSCOM and the Naval Safety Center, and ensuring the smooth flow of operations.

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c. Government Flight Representative (GFR). The NPS GFR shall act as the alternate GFR on all NPS flight related contracts. The GFR shall be a graduate of the GFR course and may be a collateral duty to the ACOS-AA and/or the OPS/ASO.

d. UAS Model Manager

(1) A UAS Model Manager shall be designated by the ACOS-AA for each UAS Type/Model/Series (T/M/S) in the NPS inventory. The UAS Model Manager shall develop T/M/S Standard Operating Procedures (SOP) in accordance with this instruction and reference (a) to include operator training and qualifications.

(2) Develop procedures for periodic review of UAS training and standardization publications. Schedule and conduct annual review of UAS SOPs.

(3) Identify, report, and submit recommendations of conflicts or errors in UAS SOPs to ACOS-AA for review. This includes ensuring all publications are periodically reviewed for currency.

(4) Maintain current list of operators and qualifications for assigned aircraft.

(5) Oversee the completion of an operator's flight log and UAS log following flight operations.

e. Director of CIRPAS

(1) Manage CIRPAS aviation assets in accordance with DoD, service, and U.S. Government directives.

(2) Act as the ARC for all CIRPAS owned assets.

(3) Execute timely communication of any issues or incidents to the ACOS-AA.

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CHAPTER 2

NPS UAS STANDARD OPERATING PROCEDURES

1. Scope. These operational procedures pertain to all NPS air assets except contracted operations approved by a designated GFR.
2. Creating, Updating and Cancelling NPS UAS Standard Operating Procedures

- a. Creating a new SOP

- (1) All UAS NPS SOPs shall use the template included in enclosure (4) and be approved by the ACOS-AA via the Operations/Safety Officer prior to flight operations.

- (2) The ACOS-AA may allow operations concurrently with development an SOP for existing UAS.

- b. Updating an SOP

- (1) All SOPs shall be reviewed annually by the UAS Model Manager for currency.

- (2) SOPs shall be updated as required to maintain current configuration and procedures.

- (3) All updates shall be submitted to the ACOS-AA via the OPS/ASO.

- c. Cancelling an SOP. A UAS SOP is required while the T/M/S UAS remains in service. The UAS SOP is cancelled when the UAS is removed from the NPS UAS inventory.

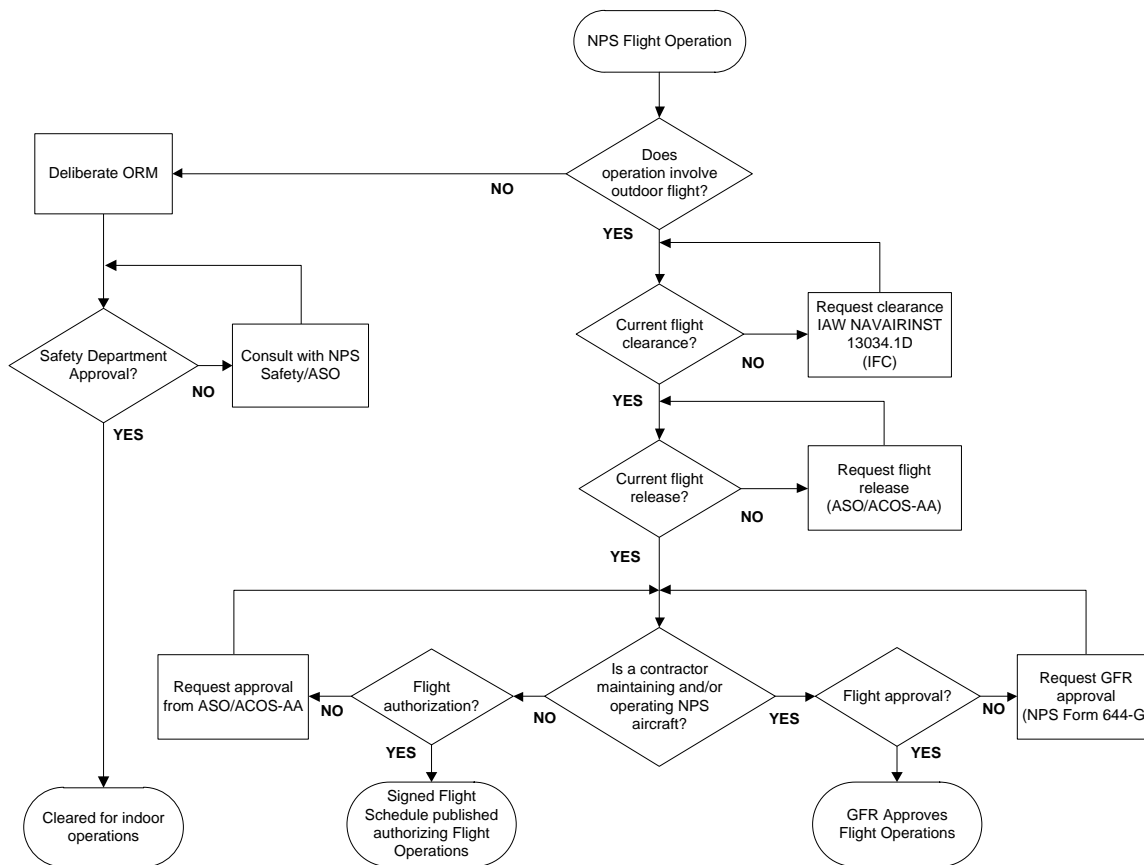
CHAPTER 3
POLICY GUIDANCE

1. Scope. This policy guidance applies to both CIRPAS and NPS owned UAS, except where noted.

2. UAS Requirements

a. Safe and authorized operation of naval aircraft requires acceptance into the Naval Inventory, a NAVAIRSYSCOM issued flight clearance per reference (b), NPS Flight Release, and authorization for flight as per reference (a). In addition, operation of naval aircraft by a contractor requires flight approval by a designated GFR. Changes in the configuration, equipment or operation of the aircraft system, including Ground Control Station(s) (if any), may require revisions to or reissue of some or all of these documents.

b. Overview



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c. Air vehicles acceptance into Naval Inventory. All manned and unmanned autonomous air vehicles and aircraft systems owned or leased by NPS shall be accepted into the Naval Inventory prior to receiving an NPS Flight Release.

d. NAVAIRSYSCOM 5.0D is the Aircraft Controlling Custodian (ACC) for NPS and is the only organization authorized to accept NPS air vehicles and aircraft systems into the Naval Inventory.

e. Once accepted, a Bureau Number (BuNo) is issued by NAVAIRSYSCOM and the NPS aircraft shall be permanently marked with its BuNo.

f. The OPS/ASO shall coordinate the acceptance of NPS aircraft into the Naval Inventory. Unmanned air vehicles and aircraft systems that do not operate autonomously are not required to be registered into the Naval Inventory.

g. NAVAIRSYSCOM Flight Clearance

(1) All NPS aircraft, both manned and unmanned, including pre-accepted aircraft shall receive airworthiness approval in the form of a flight clearance document per reference (b) from NAVAIRSYSCOM prior to NPS Flight Release.

(2) The flight clearance process involves an independent engineering assessment of an aircraft's airworthiness, safety of flight, and unusual risks.

(3) Flight clearances are issued under the authority of the Commander, NAVAIRSYSCOM, through the Flight Clearance Officer (FCO), the military head (AIR-4.0P) of the National Airworthiness Team (NAT) at NAVAIRSYSCOM, acting in accordance with the provisions of reference (a).

(4) NAVAIRSYSCOM typically issues an Interim Flight Clearance (IFC) for UAS. An IFC is a limited duration clearance with stipulated configuration, safety parameters, and operating areas for the UAS.

(5) NAVAIRSYSCOM may waive the clearance requirements for certain remote controlled air vehicles operated under the Academy of Model Aeronautics (AMA) rules.

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(6) The OPS/ASO shall assist with coordination with NAVAIRSYSCOM 4.0P on the issuance and renewal of Flight Clearances, however it is the operator/researcher's responsibility to ensure clearance is appropriate for configuration and timeframe of flight events.

h. UAS acceptance into NPS Inventory (Flight Release)

(1) A Flight Release is an acceptance by the ACOS-AA for the NPS President of an aircraft into the NPS inventory, and an authorization for NPS personnel to seek Flight Authorizations for proposed missions. The requirement for all aircraft to receive Flight Release prior to their first NPS flight, and to maintain a current NPS Flight Release while in NPS custody, is intended to insure all other requirements have been satisfied, specifically that the aircraft has been appropriately cleared for flight in accordance with the provisions of references (a) and (b) and received a BuNo.

(2) The OPS/ASO shall maintain a list of all aircraft owned by NPS, including CIRPAS assets.

i. Naval Ordnance Safety and Security Activity (NOSSA) Battery Certification

(1) All NPS aircraft utilizing batteries containing lithium shall receive a NOSSA Battery Certification prior to NAVAIRSYSCOM issuing a flight clearance or the ACOS-AA signing a Flight Release.

(2) 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.

(3) The NPS Electrical Safety Officer shall maintain and track the certification of all lithium batteries at NPS.

3. Policy. All NPS aircraft systems must receive an NPS Flight Release prior to first flight, and maintain a current NPS Flight Release while in NPS custody. In addition, NPS aircraft systems shall not be operated without both a Flight Clearance and Flight Authorization/Flight Approval, via either publication on an NPS flight schedule or GFR approval (see chapter 4)

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4. Definitions

a. Aircraft Controlling Custodian (ACC)

(1) A Naval administrative function within major commands exercising administrative control of assignment, employment, and logistic support of Navy aircraft and engines, as assigned by the Chief of Naval Operations.

(2) Commander, Naval Air Systems Command, is the ACC for NPS Aircraft, with the President, NPS, serving as the ACC for mishap reporting purposes.

b. Aircraft Reporting Custodian (ARC)

(1) A Naval administrative function, assigned by the ACC, at the lowest organizational level, to account for and provide information about assigned aircraft or support equipment. This does not necessarily imply or require physical custody.

(2) The ARC for CIRPAS assigned aircraft is the CIRPAS Director.

(3) The ARC for non-CIRPAS aircraft is the ACOS-AA.

c. Aircraft Owner. The owner shall be defined as the head of the agency responsible for procuring and managing the system. For the purposes of this instruction, the Chairman of the Department or Academic Group of which the Principal Investigator or Primary Teaching Faculty Member is a member shall be considered to be the aircraft owner.

5. Operator Requirements

a. Designations. All NPS personnel involved in UAS operations shall be designated in writing by the ACOS-AA following recommendation by the T/M/S UAS Model Manager.

b. Unmanned Aircraft Commander (UAC)

(1) The UAC shall be responsible for the safe, orderly flight as related to the physical control of one or more UASs. The UAC may direct the actions of an AVO. The positional authority of the UAC is analogous to that of an "Aircraft Commander" of a manned aircraft. As with manned aircraft, a single individual may act as both UAC and perform other UAS Crewmember (UASC) duties described herein.

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(2) Model Managers shall establish minimums and requirements for each T/M/S UAC qualification.

(3) Training and Proficiency for a UAC in accordance with reference (a) and enclosure (5) shall include:

(a) Supervision of a minimum of one mission or simulator scenario every 90 days and six missions or simulator scenarios every 180 days.

(b) Supervision of a minimum of one launch and recovery or simulator flight every 90 days to remain current.

(c) Classroom training to include, but not limited to reviewing the operator's manual, emergency procedures and proper preparation of both the Ground Control Station (if applicable) and the aircraft.

(4) T/M/S Model Managers shall establish the minimum flight duration required (at least 15 minutes) for a flight to count toward UAC currency requirements.

(5) Refresher Training for non-current UACs. Regaining currency as a UAC:

(a) Shall include a review of exercising all core UAS tasks, a review of emergency procedures, setting up and tearing down the system (portable systems only).

(b) And the observation of one flight event or simulator event for the applicable T/M/S as an observer.

c. At the completion of refresher training the UAC will be considered current and qualified to perform UAS T/M/S operator duties and missions.

d. Additional requirements for refresher training may be identified by the UAS T/M/S Model Manager in the T/M/S SOP.

e. Air Vehicle Operator (AVO)

(1) The AVO is in direct control of the unmanned vehicle. The AVO shall be designated as the Pilot in Command and is responsible for the operation and employment of the unmanned vehicle.

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(2) The UAC may act as the AVO if appropriately qualified.

(3) T/M/S Model Managers shall establish minimums and requirements for each T/M/S AVO qualification. This training should include:

(a) Classroom training to include, but not limited to, reviewing the operator's manual, emergency procedures and proper preparation of both the Ground Control Station (if applicable) and the aircraft.

(b) Actual flight events in direct line-of-sight, radio control mode without any mission requirements, including multiple takeoff and landing events to demonstrate sufficient proficiency in vehicle control, as judged by the T/M/S Model Manager.

(4) Training and Proficiency in accordance with reference (a) and shall include:

(a) A minimum of one 15 minute mission or simulator scenario every 90 days and six missions or simulator scenarios every 180 days

(b) A minimum of one launch and recovery or simulator flight every 90 days while in direct control of the aircraft to remain current.

(5) T/M/S Model Managers may establish more restrictive minimum flight duration requirements for a flight to count toward AVO currency requirements.

(6) Refresher Training for non-current AVOs. A non-current AVO needs to re-establish basic currency before undertaking a research flight. At the completion of refresher training the AVO will be considered current and qualified to perform all UAS T/M/S operator duties. This refresher shall include:

(a) A review of exercising all core UAS tasks, a review of emergency procedures, setting up and tearing down the system (portable systems only).

(b) A warm-up flight of approximately 15 minutes duration in visual, line-of-sight direct radio control including multiple takeoff and landing events without any assigned mission tasking.

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(c) Optional: (If simulator is available) At least one UAS or UAS T/M/S simulator flight, preferably under supervision of the T/M/S Model Manager.

(7) Specific, additional requirements for refresher training may be identified by the UAS T/M/S Model Manager in the SOP.

f. Mission Payload Operator (MPO)

(1) The MPO is responsible for the employment and tactics for any and all payloads onboard the unmanned vehicle. These payloads include, but are not limited to, EO and IR cameras, communications, and collection devices. The MPO is responsible for monitoring the collection plans and must work in concert with the AVO to maneuver the unmanned vehicle as appropriate.

(2) An MPO may not be required for all UAS groups or missions. The UAS Model Manager will direct MPO requirements.

(3) The AVO and/or UAC may act as the MPO if appropriately qualified.

(4) T/M/S Model Managers may establish the minimum training and proficiency requirements for AVOs working with their T/M/S in the T/M/S SOP.

g. UAS Crewmember (UASC): Generic term for any flightcrew member designated to employ UAS including those positions listed above.

h. Observer

(1) Used to denote personnel present in the Ground Control Station but are not assigned any of the above positions.

(2) Not authorized to interact with any UAS in anyway.

6. Unmanned Air Vehicle Operating Areas

a. NPS UAS shall not be flown in the National Air Space (NAS) without an FAA Certificate of Authorization (COA). For all practical purposes this means that all flight operations of NPS UAS shall be:

(1) Conducted indoors at NPS with a deliberate ORM process in place.

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(2) Conducted entirely within military restricted airspace.

b. Camp Roberts (McMillan Airfield)

(1) Flight operations are typically carried out in R-2504. R-2504 is located in Camp Roberts Air National Guard base in central California. The only paved runway in the airspace is McMillan airfield in the south-west quadrant of the base. The airspace is over unpopulated/sparsely populated terrain.

(2) The airfield is within restricted area designated R-2504 (surface to 15kft MSL). R-2504 is approximately 5 x 9.5 miles (8K x 16K).

(3) Operations at Camp Roberts may be coordinated through CIRPAS. Information can be found at <http://www.cirpas.org/facilities.html>

c. Fort Hunter Liggett

(1) A restricted area designated R-2513 lies within the boundaries of Fort Hunter Liggett. R-2513 is designated a restricted area from surface to 23kft MSL. R-2513 is approximately 10 x 20 miles (16K x 32K).

(2) Operations at Fort Hunter Liggett may be coordinated through CIRPAS. Information can be found at <http://www.cirpas.org/facilities.html>

d. Other Operating Areas

(1) Restricted airspace is designated by the FAA.

(2) Operations shall be in compliance with the current Flight Clearance.

(3) Subject to the standard approval process listed in Chapter 4.

(4) Conducted in accordance with a FAA COA and flown in the NAS.

(5) Launched, operated, and recovered greater than 12 NM off the coast in international airspace.

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e. Tethered Operations

(1) Limited operation may be approved on the NPS campus.

(2) Limitations include remote controlled vehicles operating less than 100ft AGL or autonomous vehicles operating on a tether secured to the ground and configured to remove power from the vehicle in the event the tether is severed.

(3) Approval will be granted by the ACOS-AA on a case by case basis.

CHAPTER 4

FLIGHT AUTHORIZATION, PLANNING AND APPROVAL

1. Flight Authorization (U.S. Government personnel)

a. Flight Authorization is permission to operate a naval aircraft system, flying a specific mission or series of missions.

b. Flight Authorizations for NPS aircraft are issued under the authority of the President of the Naval Postgraduate School, acting through the ACOS-AA.

c. Flight Authorizations are issued for a specified number of flights and/or specified time duration, flying a specified mission with a specified crew. Additional flights or extended duration require modification or reissue of the Authorization.

d. NPS personnel shall request flight authorization from the ACOS-AA via the OPS/ASO. Request shall include the following:

(1) Date of event(s)

(2) T/M/S of aircraft

(3) BuNo (if required)

(4) Number of aircraft operating at the same time as part of the same mission/event

(5) Unmanned Aircraft Commander

(6) Air Vehicle Operator

(7) Mission Payload Operator (as required)

(8) Operating Area

e. Approval will be propagated in a signed NPS flight schedule

2. Flight Approval (Contractor operations)

a. Flight Approval is permission for a contractor to maintain and fly a government aircraft, with the Government assuming some of the risk of loss or damage in accordance with the provisions of reference (c) and the contract.

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b. Flight Approval for contractor operated NPS aircraft are granted by an Approving Authority, acting through a properly designated Government Flight Representative (GFR). The Approving Authority for NPS aircraft is the Commander, Naval Air Systems Command. For assistance in obtaining the services of a GFR for contractor operated vehicles, contact the Operations/Safety Officer.

c. Flight Approvals are issued for a specified number of flights and/or specified time duration, flying a specified mission with a specified crew. Additional flights or extended duration require modification or reissue of the Approval.

d. Flight Approval requests shall be made via NPS form 644-C and forwarded to the NPS GFR and a courtesy copy to the ACOS-AA and OPS/ASO for tracking purposes.

e. Flight Approval requests for CIRPAS controlled assets shall be routed through CIRPAS channels and coordinated by the CIRPAS Director.

3. Flight Planning - NPS UAS Systems

a. Minimum Flight Crew Requirements

(1) Prior to authorizing a UAS flight, the ACOS-AA shall ensure the person designated as UAC is in all respects qualified for flight in the UAS in question and that minimum flight crew requirements are met.

(2) Model Manager shall establish minimums and requirements for each T/M/S flight crew requirement (per section 8).

(3) For all NPS UAS, the minimum flight crew shall consist of a qualified and current UAC that is qualified and current as an AVO.

b. Preflight Planning

(1) UACs shall accomplish preflight planning. Operators will acquaint themselves with the mission, procedures, and rules. UACs will have associated information available for their intended operation. These shall include, but are not limited to:

(2) Appropriate sections of the aircraft technical order and operator's manual.

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(3) FLIP appropriate to the specific UAS and mission, including appropriate aeronautical charts or Portable Flight Planning System (PFPS) with FAA/ICAO airspace and/or display of approved working area boundaries (whichever is more restrictive). Ensure PFPS is updated with current Charts, DAFIF/eCHUM.

(4) Fuel/battery charge requirements per appropriate technical manual.

(5) Maximum operating altitudes, minimum safe altitudes, visual line-of-sight, and datalink line-of-sight considerations for the planned route of flight and area of operations.

(6) Loss-of-link procedures coordinated through ATC and Range Control agencies.

(7) Takeoff and landing limitations.

(8) Applicable airfield advisories, bird advisories and hazard information, available through Automated Terminal Information System (ATIS), Internet sources, or as disseminated locally.

c. Preflight Requirements. The UAS model manager shall create preflight checklists for each UAS using manufacturer guidelines and publications. At a minimum, the preflight checklist shall include:

(1) General integrity of all panels, wings, and fuselage.

(2) Landing gear and tires, if applicable, are in good working order.

(3) Sufficient fuel/battery charge is onboard for safe conduct of flight.

(4) All antenna and datalink devices are secure and in good working order.

(5) Launch and recovery gear, if applicable, is in good working order.

(6) Inspection of engines or propulsion modules.

(7) Flight instrumentation, if applicable, can provide full-time altitude, attitude, and airspeed information to the AVO.

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(8) The AVO is responsible for the conduct of the preflight.

(9) Launch/Recovery Zone.

(10) For UAS that are traditionally launched (i.e. runway take-off and landing), the UAC must ensure the proposed runway is suitable for use. For those systems that are launched and recovered non-traditionally (i.e. catapult or hand-launched, net, hook, or water recovered), a thorough survey of the proposed launch and recovery zones must be accomplished prior to flight.

(11) Proposed runways must meet length, width, and surface-type requirements set forth in the specific UAS operator's manual, the UAS's model manager's guidance and the T/M/S SOP.

(12) Non-traditional launch and recovery zones must meet all applicable requirements set forth in the UAS operating manual, UAS model manager's guidance, and the T/M/S SOP. At a minimum, the launch and recovery zones will be checked for the following:

(a) The launch and recovery area should afford sufficient obstacle clearance to make takeoffs and landings (see applicable system specifications for obstacle clearance requirements).

(b) Suitably removed from populated areas. Avoid areas with high population densities and multiple high-power lines, when possible.

(c) Required approach and departure corridors.

(d) Adequate space for system launch and recovery or engineer support (construction and expansion of site).

(e) Avoid areas with high concentrations of communications equipment and transmitters, which may interfere with UAS control.

(13) If the UAS launch and recovery site is co-located with manned aircraft operations, the parking plans and flight traffic patterns must be deconflicted. This usually can be done through communication with the airfield manager

(14) The proximity to ground support equipment (GSE) (for example, generators). In addition to the physical limitations of cables and other equipment, personnel must consider other areas such as noise abatement and security.

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(15) The AVOs responsible for ensuring launch and recovery conforms to all published standards for UAS use

d. Briefings

(1) The UAC shall ensure each crewmember is briefed on items affecting safety or mission completion. Flight briefings shall include, at a minimum:

(2) Ground Emergencies

(3) In-flight emergencies, to include notification of controlling agencies, checklists, and intentions.

(4) Aborts, to include ground and airborne. Air aborts could include birdstrike, uncommanded flight control inputs, engine/motor failure, or loss of link.

(5) Sensor malfunction

(6) Forced landing procedures

(7) Loss-of-link procedures

(8) The UAS should brief procedures that comply with those in the operator's manual, this instruction, and T/M/S UAS SOP. Sound judgment should always be used in place of rote adherence to procedures.

(9) Airspace/working area and frequencies authorized for operations and method of complying with restrictions.

(10) Precautions and restrictions, including minimum aircraft requirements and go/no-go criteria.

(11) Special procedures and instructions for use during training or formation operations.

(12) Crewmember positions and responsibilities.

(13) Mission debrief time and location.

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CHAPTER 5

FLIGHT RULES

1. Scope. This section applies to NPS owned UAS. CIRPAS operations are regulated by flight release, approved by GFR.

2. General Flight Rules. NPS is not a traditional flying squadron. For this reason, this chapter is intended to be a common source of FAA, DoD, Navy, and NPS rules and regulations relevant to UAS operations.

3. Reckless Flying

a. UACs will ensure the aircraft is not operated in a careless or reckless manner that could endanger life or property.

b. UAS will not be used to conduct flights for personal use.

4. Aerobatic Flight

a. Aerobatics shall not be performed unless required for training, operational exercises, mission requirements, or test or evaluation of operational designs.

b. All Aerobatic flights shall be annotated and approved by the ACOS-AA via the NPS flight schedule.

5. Night Operations

a. All night operations shall be annotated on the flight schedule and approved by the ACOS-AA.

b. Operations not approved for night shall land prior to sunset.

6. Instrument Flight Rules (IFR)

a. Intentionally operations into Instrument Meteorological Conditions (IMC) are not authorized for NPS aircraft.

b. All flights shall operate in Visual Meteorological Conditions (VMC).

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7. Range Operations

a. Containment

(1) All NPS UAS capable of an electronic fence shall maintain a minimum 300ft buffer inside the actual airspace boundaries. T/M/S Model Managers may include more restrictive buffer minimums in their SOP.

(2) Breaking the electronic boundary shall initiate immediate corrective action to maintain the UAS in the operating area.

b. NPS UACs shall adhere to all range regulations.

CHAPTER 6

SAFETY

1. Operational Risk Management (ORM)

a. Use of ORM in the planning and execution of all military training is mandated by DoD Directive 6055.1. OPNAVINST 3500.39 (series) further directs all Navy Activities to apply ORM in planning operations and training to optimize operational capabilities and readiness.

b. UACs shall use DA Form 7566 (or suitable substitute, typically provided by the Range authority) to complete a deliberate ORM process of intended UAS operations. Any unmitigated Risk Assessment Code (RAC) of a 1 (Critical Risk) or 2 (Serious Risk) shall be briefed to the ACOS-AA prior to flight operations.

2. Mishaps/Hazards. All MISHAPS and Hazards shall be handled in accordance with Range/Exercise/Local instructions and Ref (d), the NPS Pre-Mishap Plan.

LIST OF ACRONYMS

UAS: Unmanned Aircraft Systems
ACC: Aircraft Controlling Custodian
ACOS-AA: Assistant Chief of Staff for Aviation Activities
AGL: Above Ground Level
AMA: Academy of Model Aeronautics
ARC: Aircraft Reporting Custodian
ATC: Air Traffic Control
ATIS: Automated Terminal Information System
AVO: Air Vehicle Operator
BuNo: Bureau Number
BUQ: Basic UAS Qualification
CIRPAS: Center for Interdisciplinary Remotely-Piloted
Aircraft Studies
COA: Certificate of Authorization
DAFIF: Digital Aircraft Flight Information File
DoD: Department of Defense
eCHUM: Electronic Chart Update Manual
EO: Electro Optical
FAA: Federal Aviation Administration
FCO: Flight Clearance Officer
FLIP: Flight information publication
GFR: Government Flight Representative
GSE: Ground Support Equipment
IFC: Interim Flight Clearance
IFR: Instrument Flight Rules
IMC: Instrument Meteorological Conditions
IR: Infrared
MPO: Mission Payload Operator
MSL: Mean Sea Level
NAS: National Air Space
NAT: National Airworthiness Team
NAVAIRSYSCOM: Naval Air Systems Command
NOSSA: Naval Ordnance Safety and Security Activity
NPS: Naval Postgraduate School
OPS/ASO: Aviation Operations/Safety Officer
ORM: Operational Risk Management
PFPS: Portable Flight Planning System
PQS: Personnel qualification standard
RAC: Risk Assessment Code
SOP: Standard Operating Procedures
T/M/S: Type/Model/Series
UAC: Unmanned Aircraft Commander
UASC: UAS Crewmember
VMC: Visual Meteorological Conditions

SOP TEMPLATE

1. Personnel Requirements

a. Designations. List the required and available positions to operate the UAS.

b. Training

(1) Tailor the Basic UAS Qualification (BUQ) Levels in reference (a) to the particular UAS.

(2) Define what training is required to qualify for each position.

c. Proficiency

(1) Start with the proficiency requirements in chapter 3. Adjust as required.

(2) Refresher training to regain proficiency.

(3) The requirements can be more stringent than chapter 3.

2. Flight Operations

a. Pre-Flight Checks

(1) Start with the guidance provided in this instruction and tailor to individual UAS.

(2) Include any known Range procedures.

(3) Include any assembly instructions.

b. Start/Taxi/Takeoff Checks. Create a checklist that covers starting procedures, taxi and takeoff (launch) checks and procedures.

c. Autonomous Flight. If the UAS is capable of autonomous flight, state the procedures for switching between controlled and autonomous flight. Include minimum altitude to safely transition between the two.

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d. Systems/Mission Checks. Procedures to turn on/off and operate non-flight related systems.

e. Landing Checks. Procedures to safely recover the UAS.

f. Post Flight Checks. Procedures to power off flight and mission systems to include disassembly.

3. Emergencies

a. Degraded Operations

(1) Define failures and how to safely operate the UAS when a system fails.

(2) State procedures to recover from degraded operations.

(3) State any automatic responses by the UAS to a system failure.

b. Flight Emergencies. List procedures to recover or terminate UAS in the event of an aerodynamic or structural based failure to include fire.

4. Aircraft Limitations. List any known or estimated limits to include weight, center of gravity, loading and endurance

5. Range Procedures. Define and describe any specific range and containment procedures for the UAS

UAS PQS

Name: _____

1. Assemble the UAS Air Vehicle for flight

INT: _____ Date: _____

2. Prepare the Ground Control Unit

INT: _____ Date: _____

3. Connect the Battery Charger

INT: _____ Date: _____

4. Perform Map Analysis of the Mission Operations Area

INT: _____ Date: _____

5. Conduct Mission Planning/Briefing

INT: _____ Date: _____

6. Perform UAS System Preflight Procedures

INT: _____ Date: _____

7. Perform Airspace and Frequency Management Procedures

INT: _____ Date: _____

8. Perform UAS Launch Procedures

INT: _____ Date: _____

9. Perform UAS Recovery Procedures

INT: _____ Date: _____

10. Perform UAS Post-flight Procedures

INT: _____ Date: _____

11. Disassemble the UAS

INT: _____ Date: _____

12. Perform Basic Maintenance on the UAS

INT: _____ Date: _____

13. Properly Complete UAS Flight Logbook

INT: _____ Date: _____

14. UAS Operator flight Logbook is complete, filled out,
and properly up to date

INT: _____ Date: _____

15. T/M/S Model Manager's Endorsement as Qualified UAS
Operator

Signature: _____ Date: _____

Instructor Name/Rank: _____