UNCLAS

MSGID/GENADMIN/MIL-STD-6040(SERIES)/B.0.01.00
/COMNAVAIRSYSCOM PATUXENT RIVER/-/-/-/-/-/-/

SUBJ/UAS CAT 3 IFC FOR GROUP 1 AND 2 FIXED WING UAS FOR
/DEVELOPMENTAL ACTIVITY SHORE-BASED AND SHIPBOARD OPS IN
/RESTRICTED AREAS, WARNING AREAS, U.S. NAS, AND INTERNATIONAL
/AIRSPACE/

REF/A/DESC:AUTOMATED REQUEST/NAVAIR/-/120801ZAUG2018/

REF/B/MSGID:GENADMIN/NAVAIR/-/152007ZSEP2017/

REF/C/DESC:DOC/NAWCAD AIRWORKS/-/10AUG2018/

REF/D/DESC:DOC/NAWCAD AIRWORKS/-/31AUG2018/

REF/E/DESC:DOC/NAWCAD AIRWORKS/-/10AUG2018/

REF/F/DESC:DOC/NAWCAD AIRWORKS/-/10AUG2018/

REF/G/DESC:DOC/NAWCAD AIRWORKS/-/28AUG2018/

REF/H/DESC:DOC/NAWCAD AIRWORKS/-/28MAR2018/

REF/I/DESC:DOC/NAWCAD AIRWORKS/-/28MAR2018/

REF/J/DESC:DOC/NAWCAD AIRWORKS/-/18MAY2018/

REF/K/DESC:DOC/NAWCAD AIRWORKS/-/01OCT2018/

REF/L/DESC:DOC/CNAF M-3710.7/-/15AUG2018/

REF/M/DESC:DOC/CNAFINST 3710.9/-/20NOV2017/

REF/N/DESC:DOC/DOD/-/16SEP2013/

REF/O/DESC:DOC/DODI 4540.01/-/02JUN2015/

REF/P/DESC:DOC/OPNAVINST 3500.39C/-/02JUL2010/

REF/Q/DESC:DOC/OPNAVINST 3750.6S/-/13MAY2014/

REF/R/DESC:DOC/CNAFINST 4790.2C CH-2/-/15AUG2017/

REF/S/DESC:NAVAIRINST 13034.1F/NAVAIRSYSCOM/-/30JUN2016/

NARR/REF A IS AUTOMATED REQUEST.

REF B IS PREVIOUS IFC FOR NAWCWD GROUP 1 AND 2 FIXED WING UAS

REF C IS LIST OF APPROVED NON-POR GROUP 1 AND 2 UAS,
DAAS, AND SHIP CLASSES, REV 3F, WITH UPDATES.

REF D IS MASTER LIST OF DEVELOPMENTAL ACTIVITY GROUP 1 AND 2 UAS
LISTINGS, WITH UPDATES.

REF E IS LIST OF APPROVED GROUP 1 AND 2 POWER AND PROPULSION
SYSTEMS, WITH UPDATES.

REF F IS LIST OF NAVSEA CAPACITY-LIMITED LITHIUM
BATTERY CERTIFICATION LETTERS REV 3, WITH UPDATES.

REF G IS LIST OF APPROVED AUTOPILOTS, HAND CONTROLLERS, AND GCS,
REV 2.

REF H IS LIST OF APPROVED LAUNCH AND RECOVERY EQUIPMENT, WITH
UPDATES.

REF I IS LIST OF APPROVED STORE CARRIAGE AND RELEASE
MECHANISMS, AND APPROVED STORES, REV 1A, WITH UPDATES.

REF J IS LIST OF DEVELOPMENTAL ACTIVITY STANDARD OPERATING PROCEDURES, WITH UPDATES.

REF K IS LIST OF APPROVED LASERS, WITH UPDATES.

REF L IS NATOPS GENERAL FLIGHT AND OPERATING INSTRUCTIONS MANUAL SERIES.

REF M IS GUIDANCE FOR THE OPERATION OF DEPARTMENT OF NAVY GROUP 1 AND 2 UNMANNED AIRCRAFT SYSTEMS.

REF N IS DOD/FAA UAS OPERATIONS MEMORANDUM OF AGREEMENT.

REF O IS DOD INSTRUCTION FOR USE OF INTERNATIONAL AIRSPACE BY U.S. MILITARY AIRCRAFT AND FOR MISSILE AND PROJECTILE FIRINGS.

REF P IS OPMNAV POLICY FOR OPERATIONAL RISK MANAGEMENT.

REF Q IS NAVAL AVIATION SAFETY MANAGEMENT SYSTEM.

REF R IS NAVAL AVIATION MAINTENANCE PROGRAM.

REF S IS AIRWORTHINESS AND CYBERSECURITY SAFETY POLICIES FOR AIR VEHICLES AND AIRCRAFT SYSTEMS.

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GENTEXT/REMARKS/1. IRT REF A, NAVAIR UAS CATEGORY 3 INTERIM FLIGHT CLEARANCE (IFC) IS PROVIDED FOR GROUP 1 AND 2 FIXED WING UAS FOR DEVELOPMENTAL ACTIVITIES SPECIFIED IN REFS C AND D FOR SHORE-BASED AND SHIPBOARD OPERATIONS IN RESTRICTED AREAS, WARNING AREAS, PROHIBITED AREAS, U.S. NATIONAL AIRSPACE AND INTERNATIONAL AIRSPACE. THIS IFC CANCELS AND SUPERSEDES REF B AND IS SUBJECT TO THE FOLLOWING CONFIGURATION, LIMITATIONS, PROCEDURES, WARNINGS, CAUTIONS, AND NOTES. CHANGES FROM REF B INCLUDE:

A. REF D ADDED MASTER LIST OF DEVELOPMENTAL UAS LISTINGS.
B. REF E ADDED POWER AND PROPULSION SYSTEMS.
C. PARA 2.A(6) REVISED FOR NEW LASER REFERENCE.
D. PARA 3.D.(4) ADDED MOVING PLATFORMS TO WIND LIMITS.
E. PARA 3.E.(2)(A) ADDED POINTER TO PARA 7.L FOR NEW PROCESS FOR REQUESTING A STATEMENT OF AIRWORTHINESS ISO FAA COA.
F. PARA 3.H DELETED PROHIBITION AGAINST OPS FROM MOVING PLATFORMS, AND ADDED GCS TO GCS HANDOFF.
G. PARA 3.M REVISED FOR NEW LASER REFERENCE.
H. PARA 3.P REVISED LIMITS FOR C-UAS OPS.
I. PARA 4.J ADDED FUEL LEAK CHECKS PROCEDURE.
J. PARA 4.M ADDED NEW LASER OPERATIONS PROCEDURE.
K. PARA 4.N EDITED LOSS OF C2 LINK AVOIDANCE PROCEDURE.
L. PARA 7.J ADDED NEW INFORMATION WRT REQUESTS FOR LASER APPROVALS.
M. UPDATE THE IFC TO CURRENT STANDARD LANGUAGE.
N. ALL OTHER CHANGES ADMINISTRATIVE.


A. AIR VEHICLE:
   (1) PROPULSION SYSTEMS:
      (A) ELECTRIC MOTORS: IAW REF C.
      (B) OTHER PROPULSION SYSTEMS: IAW REF E (SEE PARA 7.J).
   (2) ELECTRICAL POWER:
      (A) FUEL CELLS: IAW REF E (SEE PARA 7.J).
      (B) LITHIUM CHEMISTRY BATTERIES IAW REF F.
R/C LINK: IAW REFCS C AND G.
TELEMETRY: IAW REFCS C AND G.

(5) PAYLOADS: SHALL CONFORM WITH PARA 3.A. WEIGHT LIMITS AND PARA 3.M EMC SOFT REQUIREMENTS.
(6) LASERS: PROHIBITED EXCEPT WHERE SPECIFICALLY APPROVED IN REF K (SEE PARA 7.I).

D. MECHANICALLY ASSISTED LAUNCH OR RECOVERY SYSTEMS: PROHIBITED EXCEPT WHERE SPECIFICALLY APPROVED IN REF H (SEE PARA 7.H) AND AS FOLLOWS:
(1) BUNGEE LAUNCH.

3. LIMITATIONS: IAW THE MOST RESTRICTIVE OF REFCS C THROUGH L, APPLICABLE OEM MANUALS, APPLICABLE APPROVED TEST PLAN(S), WITH THE FOLLOWING ADDITIONS AND EXCEPTIONS:
A. MAXIMUM TAKEOFF WEIGHT: 55 LBS.
B. MAXIMUM AIRSPEED:
(1) TAKEOFF/LAUNCH, LANDING/RECOVERY: 100 KIAS.
(2) FLIGHT: 250 KIAS.
(3) AS FURTHER RESTRICTED BY USING AGENCY.
C. WEATHER: IAW THE MOST RESTRICTIVE OF REFCS J, L, AND AS FOLLOWS:
(1) VISUAL METEOROLOGICAL CONDITIONS (VMC) ONLY.
(2) FLIGHT OPERATIONS WITHIN 20 NM OF THUNDERSTORMS OR OBSERVED LIGHTNING: PROHIBITED.
(3) FLIGHT OPERATIONS IN FORECAST OR OBSERVED ICING CONDITIONS: PROHIBITED.
(4) FLIGHT OPERATIONS IN VISIBLE PRECIPITATION: IAW REF C AND REF D (SEE PARA 4.S(5)).
D. WIND LIMITS (TAKEOFF/LAUNCH, LANDING/RECOVERY, AND FLIGHT):
(1) GUSTS ARE CONSIDERED ANY WIND VARIATIONS ABOVE THE MEASURED SUSTAINED VALUE.
(2) TAKEOFF/LAUNCH AND LANDING/RECOVERY:
(A) MAXIMUM WINDS, INCLUDING GUSTS (KTS): 30.
(B) MAXIMUM GUST (KTS): 10.
(C) MAXIMUM CROSSWIND (KTS): 10, INCLUDING GUSTS.
(D) MAXIMUM TAILWIND, INCLUDING GUSTS (KTS): 0.
(E) FOR MOVING PLATFORM OR SHIPBOARD TAKEOFF/LAUNCH AND LANDING/RECOVERY OPERATIONS, RELATIVE WIND (VECTOR SUM OF MOVING PLATFORM/SHIP SPEED AND TRUE WIND SPEED) SHALL BE USED.
(3) FLIGHT:
(A) MAXIMUM WINDS NOT TO EXCEED AIR VEHICLE MAXIMUM AIRSPEED.

E. AIRSPACE OPERATIONS:
(1) FLIGHT OPERATIONS IN RESTRICTED AREAS, WARNING AREAS AND PROHIBITED AREAS SHALL BE IAW USING AGENCY PROCEDURES, REF L, AND AS FOLLOWS:
(A) FLIGHT OPERATIONS SHALL BE OVER WATER OR OVER SPARSELY POPULATED OR UNPOPULATED AREAS ONLY.
(B) INTENTIONAL FLIGHT OVER CONGESTED AREAS, OPEN AIR ASSEMBLIES OF PEOPLE, AND HEAVILY TRAFFICKED
ROADS: PROHIBITED.

-C) FLIGHT OPERATIONS IN WARNING AREA AIRSPACE IN INTERNATIONAL AIRSPACE SHALL BE IAW USING AGENCY PROCEDURES, REF O DUE REGARD PROCEDURES (OPERATIONS NOT CONDUCTED UNDER INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO) PROCEDURES), AND REF L. SEE PARA 4.D AND 4.R IF DUE REGARD IS SATISFIED BY VISUAL OBSERVERS.

(D) PROHIBITED AREA OPERATIONS SHALL BE IAW APPROVED FAA COA.

-(2) FLIGHT OPERATIONS IN U.S. NATIONAL AIRSPACE OUTSIDE OF RESTRICTED AREAS OR WARNING AREAS SHALL BE IAW REF N, APPROVED FAA COA OR COA VIA NOTIFICATION AND AS FOLLOWS (SEE PARA 7.L):

(A) CLASS G AIRSPACE, CLASS D AIRSPACE, AND CLASS E SURFACE AREA AIRSPACE AT OR BELOW 400 FT AGL ONLY.

(1) EXCEPTION: FLIGHT OPERATIONS IN CLASS B, C OR E TRANSITION, ENROUTE AIRSPACE OR SURFACE AREAS AT ALTITUDES GREATER THAN 400 FT AGL MAY BE APPROVED ON A CASE-BY-CASE BASIS (SEE PARA 7.L).

(B) FLIGHT OPERATIONS SHALL BE OVER WATER OR OVER SPARSELY POPULATED OR UNPOPULATED AREAS ONLY.

-C) INTENTIONAL FLIGHT OVER PERSONNEL, CONGESTED AREAS, OPEN AIR ASSEMBLIES OF PEOPLE, AND HEAVILY TRAFFICKED ROADS: PROHIBITED.

(D) MAXIMUM AIRSPEED: 100 KIAS.

(E) MINIMUM CLOUD CLEARANCE: 500 FEET BELOW AND 2,000 FEET HORIZONTALLY.

(F) MINIMUM VISIBILITY: 3 STATUTE MILES.

(G) MAXIMUM ALTITUDE:

1) CLASS D AND G AIRSPACE: 1200 FT AGL AS FURTHER RESTRICTED BY CLASS OF AIRSPACE AND APPLICABLE COA OR COA VIA NOTIFICATION.

2) CLASS E SURFACE AREA AIRSPACE: 400 FT AGL AS FURTHER RESTRICTED BY COA OR COA VIA NOTIFICATION.

(H) NIGHT OPERATIONS: IAW APPROVED FAA COA OR COA VIA NOTIFICATION

(I) THE AIR VEHICLE SHALL BE OPERATED WITHIN VISUAL LINE OF SIGHT OF THE AVO OR QUALIFIED SAFETY OBSERVER AT ALL TIMES. SEE PARA 4.R.

(J) SAFETY OBSERVERS SHALL MAINTAIN CONTINUOUS VOICE CONTACT WITH AVO.

(K) IF A SAFETY OBSERVER LOSES VISUAL CONTACT WITH THE AIR VEHICLE, THE OBSERVER SHALL NOTIFY THE AVO IMMEDIATELY.

(L) THE AIR VEHICLE SHALL BE PROGRAMMED TO RETURN TO A PREDETERMINED LOCATION OR TERMINATE FLIGHT SUCH THAT THE AIRCRAFT WILL NOT EXIT THE COA APPROVED AIRSPACE IF THE AIR VEHICLE LOSES COMMAND AND CONTROL COMMUNICATIONS (C2) LINK OR GPS.

(M) THE AVO SHALL MAINTAIN RADIO CONTACT WITH TOWER OR ATC FACILITY PROVIDING AIR TRAFFIC SERVICES AT ALL TIMES WHILE OPERATING IN CLASS D OR E AIRSPACE.

(N) THE AVO SHALL MONITOR COMMON TRAFFIC ADVISORY FREQUENCY OF THE NEAREST AIRPORT AT ALL TIMES WHEN
OPERATING IN CLASS G AIRSPACE.

(O) SIMULTANEOUS OPERATION OF TWO OR MORE AIR VEHICLES FROM A SINGLE GCS: PROHIBITED.

(P) SIMULTANEOUS OPERATION OF TWO OR MORE AIR VEHICLES BY A SINGLE AVO: PROHIBITED.

(Q) GCS TO GCS HANDOFF: PROHIBITED.

(R) DROPPING OBJECTS FROM UAS OUTSIDE OF RESTRICTED AREAS OR WARNING AREAS: PROHIBITED.

(3) FLIGHT OPERATIONS IN INTERNATIONAL AIRSPACE OUTSIDE OF WARNING AREAS SHALL BE AS FOLLOWS.

(A) FLIGHT OPERATIONS SHALL BE PLANNED/CONDUCTED TO AVOID OVERFLIGHT OF PERSONNEL, POPULATED GROUND AREAS, AND TO MINIMIZE EXPOSURE TO MANNED AIRCRAFT. WHEN MISSION REQUIREMENTS Dictate THE NEED TO OPERATE OVER PERSONNEL, POPULATED OR CONGESTED AREAS, DELIBERATE AND/OR TIME CRITICAL OPERATIONAL RISK MANAGEMENT SHALL BE CONDUCTED WITH DUE CONSIDERATION OF THE POPULATION DENSITY AND HAZARDS TO PERSONNEL ON THE GROUND. (SEE PARA 4.S(1) AND PARA 7.O).

(B) FLIGHT OPERATIONS SHALL BE IAW ICAO FLIGHT PROCEDURES, OR, IF CONDUCTING FLIGHT OPERATIONS NOT UNDER ICAO PROCEDURES, OPERATIONS SHALL BE IAW REF O DUE REGARD PROCEDURES, AND REF L. SEE PARA 4.D AND 4.R IF DUE REGARD IS SATISFIED BY VISUAL OBSERVERS.

(4) FLIGHT OPERATIONS IN FOREIGN AIRSPACE: PROHIBITED.

(5) FLIGHT OPERATIONS IN COMBAT ZONES: PROHIBITED.

F. SAFETY HAZARD KEEP OUT ZONES (TAKEOFF/LAUNCH, LANDING/RECOVERY, AND GROUND OPERATIONS):

(1) UAS UP TO 20 LB:

(A) TAKEOFF/LAUNCH: EXCEPT WHILE HAND-LAUNCHING UAS, ESSENTIAL PERSONNEL SHALL MAINTAIN A MINIMUM LATERAL STAND-OFF DISTANCE OF 30 FEET FROM THE RUNWAY CENTERLINE OR TAKEOFF/LAUNCH PATH, AND NO CLOSER THAN THE RUNWAY EDGE, UNLESS BARRIERS OR STRUCTURES ARE PRESENT THAT PROTECT ESSENTIAL PERSONNEL FROM THE AIR VEHICLE AND/OR DEBRIS IN THE EVENT OF A MISHAP.

(B) EXCEPT WHILE HAND-LAUNCHING UAS, ESSENTIAL PERSONNEL SHALL MAINTAIN MINIMUM LATERAL STAND-OFF DISTANCE OF 30 FEET FROM THE AIR VEHICLE FLIGHT PATH AT ALTITUDES LESS THAN 50 FEET ABOVE GROUND LEVEL, UNLESS BARRIERS OR STRUCTURES ARE PRESENT THAT PROTECT ESSENTIAL PERSONNEL FROM THE AIR VEHICLE AND/OR DEBRIS IN THE EVENT OF A MISHAP.

(C) WHEN HAND-LAUNCHING UAS, A LAUNCH SAFETY ZONE OF A MINIMUM OF 500 FEET DOWN RANGE BY 60 FEET WIDE, CENTERED ON THE FLIGHT PATH, SHALL BE CLEARED OF PERSONNEL PRIOR TO AND DURING LAUNCH.

(D) TAKEOFF/LAUNCH: ESSENTIAL PERSONNEL LESS THAN 65 FEET FORWARD OF THE RUNWAY CENTERLINE OR TAKEOFF/LAUNCH PATH, AND
THE AIRCRAFT (AS MEASURED ALONG THE RUNWAY CENTERLINE OR TAKEOFF PATH) SHALL BE PROVISIONED WITH AN OBSTACLE OR MOVABLE PROTECTIVE BARRIER LOCATED IN CLOSE PROXIMITY OR INSIDE A STRUCTURE THAT PROTECTS ESSENTIAL PERSONNEL FROM THE AIR VEHICLE OR DEBRIS IN THE EVENT OF A MISHAP.

(E) LANDING/RECOVERY: ESSENTIAL PERSONNEL LESS THAN 65 FEET FROM THE RUNWAY CENTERLINE OR LANDING/RECOVERY PATH SHALL BE PROVISIONED WITH AN OBSTACLE OR MOVABLE PROTECTIVE BARRIER LOCATED IN CLOSE PROXIMITY OR INSIDE A STRUCTURE THAT PROTECTS ESSENTIAL PERSONNEL FROM THE AIR VEHICLE OR DEBRIS IN THE EVENT OF A MISHAP.

(F) NON-ESSENTIAL PERSONNEL SHALL MAINTAIN A MINIMUM LATEROAL STAND-OFF DISTANCE OF 65 FEET FROM RUNWAY CENTERLINE OR TAKEOFF/LAUNCH/LANDING/RECOVERY PATH, AND NO CLOSER THAN THE RUNWAY EDGE (AS MEASURED FROM THE AIRCRAFT OR RUNWAY CENTERLINE).

(G) NON-ESSENTIAL PERSONNEL SHALL MAINTAIN A MINIMUM LATEROAL STAND-OFF DISTANCE OF 65 FEET FROM THE AIRCRAFT/RUNWAY CENTERLINE, AND AIR VEHICLE FLIGHT PATH WHILE AT ALTITUDES LESS THAN 50 FEET ABOVE THE GROUND.

(H) FOR LANDING/RECOVERY, SAFETY ZONES EXTEND THE LENGTH OF THE ACTIVE RUNWAY OR LANDING PATH.

(I) FOR TAKEOFF/LAUNCH, THE SAFETY ZONE BEGINS AT THE AIR VEHICLE AND EXTENDS THE LENGTH OF THE ACTIVE RUNWAY OR TAKEOFF/LAUNCH PATH.

(2) UAS GREATER THAN 20 LB:

(A) TAKEOFF/LAUNCH: ESSENTIAL PERSONNEL SHALL MAINTAIN A MINIMUM LATEROAL STAND-OFF DISTANCE OF 50 FEET FROM THE RUNWAY CENTERLINE OR TAKEOFF/LAUNCH PATH, AND NO CLOSER THAN THE RUNWAY EDGE UNLESS BARRIERS OR STRUCTURES ARE PRESENT THAT PROTECT ESSENTIAL PERSONNEL FROM THE AIR VEHICLE AND/OR DEBRIS IN THE EVENT OF A MISHAP.

(B) ESSENTIAL PERSONNEL SHALL MAINTAIN MINIMUM LATEROAL STAND-OFF DISTANCE OF 50 FEET FROM THE AIR VEHICLE FLIGHT PATH AT ALTITUDES LESS THAN 50 FEET ABOVE GROUND LEVEL, UNLESS BARRIERS OR STRUCTURES ARE PRESENT THAT PROTECT ESSENTIAL PERSONNEL FROM THE AIR VEHICLE AND/OR DEBRIS IN THE EVENT OF A MISHAP.

(C) TAKEOFF/LAUNCH: ESSENTIAL PERSONNEL LESS THAN 100 FEET FROM THE RUNWAY CENTERLINE OR TAKEOFF PATH, AND FORWARD OF THE AIRCRAFT ALONG THE RUNWAY CENTERLINE OR TAKEOFF PATH SHALL BE PROVISIONED WITH AN OBSTACLE OR MOVABLE PROTECTIVE BARRIER LOCATED IN CLOSE PROXIMITY OR INSIDE A STRUCTURE THAT PROTECTS ESSENTIAL PERSONNEL FROM THE AIR VEHICLE OR DEBRIS IN THE EVENT OF A MISHAP.
(D) LANDING/RECOVERY: ESSENTIAL PERSONNEL LESS THAN 100 FEET FROM THE RUNWAY CENTERLINE OR TAKEOFF PATH SHALL BE PROVISIONED WITH AN OBSTACLE OR MOVABLE PROTECTIVE BARRIER LOCATED IN CLOSE PROXIMITY OR INSIDE A STRUCTURE THAT PROTECTS ESSENTIAL PERSONNEL FROM THE AIR VEHICLE OR DEBRIS IN THE EVENT OF A MISHAP.

(E) NON-ESSENTIAL PERSONNEL SHALL MAINTAIN A MINIMUM LATERAL STAND-OFF DISTANCE OF 100 FEET FROM RUNWAY CENTERLINE OR TAKEOFF/LAUNCH/LANDING/RECOVERY PATH, AND NO CLOSER THAN THE RUNWAY EDGE (AS MEASURED FROM THE AIRCRAFT OR RUNWAY CENTERLINE).

(F) NON-ESSENTIAL PERSONNEL SHALL MAINTAIN A MINIMUM LATERAL STAND-OFF DISTANCE OF 100 FEET FROM THE AIRCRAFT/RUNWAY CENTERLINE, AND AIR VEHICLE FLIGHT PATH WHILE AT ALTITUDES LESS THAN 50 FEET ABOVE THE GROUND.

(G) FOR LANDING, SAFETY ZONES EXTEND THE LENGTH OF THE ACTIVE RUNWAY OR LANDING PATH.

(H) FOR TAKEOFF, THE SAFETY ZONE BEGINS AT THE AIR VEHICLE AND EXTENDS THE LENGTH OF THE ACTIVE RUNWAY OR TAKEOFF PATH.

G. SAFETY HAZARD KEEP OUT ZONES (FLIGHT):

(1) MINIMUM 500 FEET LATERAL SEPARATION FROM ALL NON-ESSENTIAL PERSONNEL UNLESS:

(A) BARRIERS OR STRUCTURES ARE PRESENT THAT PROTECT NON-ESSENTIAL PERSONNEL FROM THE AIR VEHICLE AND/OR DEBRIS IN THE EVENT OF A MISHAP. THE AVO IS RESPONSIBLE FOR ENSURING NON-ESSENTIAL PERSONNEL REMAIN UNDER SUCH PROTECTION. SHOULD NON-ESSENTIAL PERSONNEL LEAVE SUCH PROTECTION AND ARE WITHIN 500 FEET OF THE AIR VEHICLE, THE AVO SHALL CEASE FLIGHT OPERATIONS IN A MANNER ENSURING THE SAFETY OF NON-ESSENTIAL PERSONNEL; OR

(B) THE AVO HAS MADE AN OPERATIONAL RISK ASSESSMENT (ORM) AND DETERMINED THE OPERATION WILL NOT CREATE UNNECESSARY RISK TO NON-ESSENTIAL PERSONNEL (SEE REF P FOR ORM POLICY).

(2) MINIMUM 500 FEET LATERAL SEPARATION FROM ALL VESSELS, VEHICLES AND STRUCTURES UNLESS THE AVO HAS MADE AN ORM ASSESSMENT AND DETERMINED THE OPERATION WILL NOT CREATE UNNECESSARY RISK OF DAMAGE TO VESSELS, VEHICLES OR STRUCTURES (SEE PARA 4.S(1) AND 7.M).

H. PRIOR TO TAKEOFF THE AIR VEHICLE SHALL HAVE SUFFICIENT USABLE BATTERY CHARGE OR FUEL TO COMPLETE THE PLANNED FLIGHT AND LAND BEFORE REACHING MINIMUM USEABLE BATTERY CAPACITY OR FUEL STATE, AS FURTHER RESTRICTED BY REF J AND APPLICABLE OEM MANUALS.

I. GCS TO GCS HANDOFF: AUTHORIZED BETWEEN GCS WITH IDENTICAL SOFTWARE CONFIGURATIONS IAW OEM MANUALS AND ONLY AFTER TWO-WAY VERBAL COMMUNICATIONS IS ESTABLISHED BETWEEN GROUND STATIONS PRIOR TO HANDOFF.

J. SHIPBOARD OPERATIONS: IAW THE MOST RESTRICTIVE OF REFS C THROUGH L, AND THE FOLLOWING:

(1) GROUP 2 FIXED WING RECOVERIES ABOARD SHIP: PROHIBITED.
(2) SHIPBOARD OPERATIONS ABOARD VESSELS LISTED IN THE UNITED
STATES NAVAL VESSEL REGISTRY OR MILITARY SEALIFT COMMAND
INVENTORY: SHIP CLASS/HULLS LISTED IN REF C AND REF F.
(3) SHIPBOARD OPERATIONS FOR VESSELS NOT LISTED IN EITHER THE
UNITED STATES NAVAL VESSEL REGISTRY OR MILITARY SEALIFT
COMMAND INVENTORY: AUTHORIZED.
(4) LAUNCH OR RECOVERY CONCURRENT OPERATIONS WITH MANNED OR
UNMANNED AIRCRAFT SHIPBOARD LAUNCH OR RECOVERY OPERATIONS:
PROHIBITED.
(5) INTENTIONAL FLIGHT OVER SHIP: PROHIBITED.
(A) EXCEPTION: INTENDED FLIGHT PATH AND CONTINGENCY PATHS
SUCH AS WAVE-OFF SHALL NOT CROSS OVER THE DECK EDGE
DURING ANY PHASE OF FLIGHT EXCEPT LAUNCH AND
RECOVERY.
(B) APPROACH AND RECOVERY FLIGHT PATHS (AS EXTENDED
BEYOND THE TARGET RECOVERY LOCATION) THAT CROSS
OVER THE SHIP SUPERSTRUCTURE: PROHIBITED.
(6) THE FIRST WAYPOINT AFTER LAUNCH SHALL BE SET TO ENSURE
FLIGHT AWAY FROM THE SHIP WITHOUT FLYING OVER THE SHIP.
K. INTENTIONAL OPERATIONS BEYOND GCS RF LINE OF SIGHT:
PROHIBITED.
L. OPERATIONS NEAR ACTIVE ANTENNAS OF OTHER-SYSTEM RADIO
TRANSMITTERS AND RADARS, ESPECIALLY THOSE WHICH Emit HIGH
LEVELS OF POWER:
(1) MAINTAIN A SLANT-RANGE STANDOFF DISTANCE OF 2 NM
(3,700 M) FROM OPERATING MAIN BEAMS OF VERY-HIGH-POWERED
AIR-SEARCH AND FIRE-CONTROL RADARS, AND SATCOM UPLINK
TERMINALS, ESPECIALLY THOSE WHICH Emit HIGH LEVELS OF
POWER (GREATER THAN 1 KW AND ANTENNA GAINS GREATER THAN
20 DBI).
(2) DURING COMBATANT SHIPBOARD OPS, CONDUCT ALL
LAUNCH/RECOVERIES FROM FAN TAIL, AND REMAIN BELOW MAIN
BEAMS OF DIRECTIONAL ANTENNAS BY FLYING BELOW A MAXIMUM
HEIGHT ABOVE WATER OF 60 FT UNTIL REACHING A STANDOFF
DISTANCE OF 2 NM; OR, A DISTANCE OF 3 NM FOR CG-47, DDG-
51, AND CVN-78 CLASS SHIPS. OTHERWISE, FOR SHIP CLOSE-IN
FLIGHT, SECURE ALL HF RADIO AND RADAR TRANSMISSIONS.
AVOID SATCOM UPLINK MAIN BEAMS.
(3) MAINTAIN A STANDOFF DISTANCE OF 100 FT (30 M) FROM
OPERATING HF/VHF/UHF COMMUNICATIONS TRANSMITTERS (FROM
400 W TO 1 KW OR LESS) WITH LOW-GAIN ANTENNAS.
M. AN ELECTROMAGNETIC COMPATIBILITY (EMC) SAFETY-OF-FLIGHT TEST
(SOFT) SHALL BE PERFORMED PRIOR TO FIRST FLIGHT. THE AIR
VEHICLE OPERATOR IS RESPONSIBLE FOR ENSURING EMC SYSTEM
COMPATIBILITY IN THE AREA OF OPERATION. FLIGHT CRITICAL
SYSTEMS SHALL BE CHECKED AGAINST ALL NEWLY INSTALLED AND/OR
MODIFIED EQUIPMENT (INCLUDING INSTRUMENTATION) FOR EMC. THIS
INCLUDES NEW TRANSMITTER FREQUENCIES THAT HAVE NOT BEEN
PREVIOUSLY CHECKED FOR COMPATIBILITY:
(1) THE EMC SOFT SHALL BE CONDUCTED WHILE THE NEARBY RF
EMITTERS (RADIOS/RADARS/CREW SYSTEMS) THAT WILL BE
PROXIMATE TO THE AIR VEHICLE OR GCS DURING AIR VEHICLE
OPERATIONS ARE ACTIVATED.
(2) AN EMC SOFT IS NOT COMPLETE UNTIL ALL UNACCEPTABLE EMC
ANOMALIES HAVE BEEN CORRECTED.
N. LASER OPERATIONS: PROHIBITED EXCEPT WHERE SPECIFICALLY
O. CARRIAGE OF WEAPONS, EXPLOSIVES, CARTRIDGE ACTIVATED DEVICES AND OTHER ENERGETICS FUNCTIONS: PROHIBITED.

P. CARRIAGE AND RELEASE OF STORES: PROHIBITED EXCEPT WHERE SPECIFICALLY APPROVED IN REF I.

Q. INTENTIONAL OPERATIONS IN A GPS OR C2 JAMMING ENVIRONMENT ARE AUTHORIZED IN SUPPORT OF COUNTER-UAS TESTING WHEN TEST REQUIREMENTS DICATE THE NEED TO OPERATE IN AN ACTIVE JAMMING ENVIRONMENT, AND THE AVO HAS MADE AN ORM ASSESSMENT AND DETERMINED THAT THE OPERATION WILL NOT CREATE UNNECESSARY RISK TO PERSONNEL, DAMAGE TO VESSELS, VEHICLES OR STRUCTURES. SEE PARA 4.S(1) AND PARA 7.O.

(1) C-UAS TESTS SHALL BE CONDUCTED IN A KNOWN ELECTROMAGNETIC ENVIRONMENT (EME).

(2) PRIOR TO USE OF ACTIVE RF C-UAS DEVICES, AIR VEHICLE BATTERY CHARGE OR FUEL SHALL BE LIMITED SUCH THAT DEPARTURE FROM THE UAS OPERATING AREA OR COA APPROVED AIRSPACE IS NOT POSSIBLE IN THE EVENT OF C2 LOSS, GPS FAILURE, OR GUIDANCE, NAVIGATION OR CONTROL FAILURE.

(3) C-UAS TESTING IN RESTRICTED AREAS, WARNING AREAS, OR PROHIBITED AREAS SHALL BE IAW USING AGENCY PROCEDURES.

(4) C-UAS TESTING IN U.S. NATIONAL AIRSPACE OUTSIDE OF RESTRICTED AREAS, WARNING AREAS, OR PROHIBITED AREAS SHALL BE IAW AN APPROVED FAA COA (SEE PARA 7.K).

R. SYSTEM OPERATION IN THE PRESENCE OF FLAMMABLE VAPORS: PROHIBITED.

4. PROCEDURES, WARNINGS, CAUTIONS, AND NOTES: IAW REFS C THROUGH L, APPLICABLE OEM MANUALS, AND THE FOLLOWING:

A. EMERGENCY PROCEDURE: CRITICAL SYSTEM FAILURE.

A CRITICAL SYSTEM FAILURE CAN LEAVE THE AIR VEHICLE IN AN UNCONTROLLED STATE WHILE OPERATING WITHIN THE PARA 3 USAGE ENVELOPE. SUCH A FAILURE MAY RESULT IN THE AIR VEHICLE UNINTENTIONALLY DEPARTING THE OPERATING AREA OR SAFE-FOR-FLIGHT BOX.

(1) IN THE EVENT THE AIR VEHICLE UNINTENTIONALLY DEPARTS THE OPERATING AREA OR SAFE-FOR-FLIGHT BOX, LOCAL AIR TRAFFIC CONTROL (ATC)/RANGE CONTROL AUTHORITY SHALL BE NOTIFIED IMMEDIATELY AND THE AIRCRAFT DITCHED OVER A PRE-SELECTED POINT.

(2) IF NOT POSSIBLE TO MAKE THE PRE-SELECTED POINT, EVERY EFFORT SHALL BE MADE TO VISUALLY INSPECT THE PROBABLE IMPACT AREA PRIOR TO EXECUTING THE FLIGHT TERMINATION PROCEDURE.

------------------------ WARNING ------------------------

A CRITICAL SYSTEM FAILURE MAY RESULT IN THE LOSS OF AIR VEHICLE, INJURY OR DEATH TO PERSONNEL, AND/OR DAMAGE TO PROPERTY/SHIP EITHER INSIDE OR OUTSIDE OF THE UAS OPERATING AREA OR SAFE FOR FLIGHT BOX.

------------------------- NOTE -------------------------

NO SECONDARY METHOD OF TERMINATING/CONTROLLING THE VEHICLE EXISTS.

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B. NORMAL PROCEDURE: PREFLIGHT INSPECTION.

PRIOR TO EACH FLIGHT THE AVO SHALL CONDUCT A PREFLIGHT INSPECTION AND DETERMINE THAT THE UAS IS IN A CONDITION FOR SAFE OPERATION.
C. NORMAL PROCEDURE: MID-AIR COLLISION AVOIDANCE WITH MANNED AIRCRAFT.

The Group 1 and 2 fixed wing UAS authorized in this flight clearance do not have a sense and avoid system. To minimize the risk of mid-air collision:

1. AVO shall coordinate airspace use with the airspace controlling authority and be in communication with this authority to actively deconflict the airspace when operating the air vehicle.

2. AVO shall initiate an RTB or execute flight termination procedures, as conditions permit, if the location of the air vehicle is in question.

3. In the event of loss of communications between the AVO and local ATC/range control, the AVO shall follow local procedures.

--- WARNING ---
A mid-air collision with a manned aircraft may result in loss of the air vehicle, injury or death to personnel, and/or damage to or loss of the manned aircraft.

--- WARNING ---
Air vehicle exterior lighting systems have not been characterized by NAVAIR and may not meet Federal Aviation standards for minimum intensity or area of coverage, increasing the risk of mid-air collision which may result in injury to personnel and damage to property.

--- NOTE ---
The AVO is responsible for ensuring that there is a safe operating distance between manned aircraft and the air vehicle.

D. NORMAL PROCEDURE: SAFETY OBSERVERS.

A safety observer in verbal communication with the AVO shall maintain visual line of sight contact with the air vehicle as follows:

1. During launch and recovery, the safety observer shall be capable of initiating a takeoff/launch abort or waveoff by direct communication (e.g., radio, etc.) with the AVO.

2. During takeoff/launch and landing/recovery operations, the safety observer shall assess the air vehicle flight path for excessive errors in vehicle tracking or navigation, and if the errors appear to be unreasonably large or growing quickly, the safety observer shall initiate a takeoff/launch abort or waveoff call to the AVO.

3. During flight operations in U.S. national airspace outside of restricted and warning areas, safety observers shall provide the AVO with air vehicle flight path, proximity to aviation activities and other hazards (e.g., terrain, weather, structures) to prevent the air vehicle from creating a collision hazard. Safety observers shall be able to see the air vehicle and surrounding airspace at all times.

--- NOTE ---
The effectiveness of the safety observer during night recovery operations is very limited and additional
CONSERVATISM SHOULD BE USED WHEN ASSESSING THE NEED TO PERFORM A WAVEOFF DURING NIGHT RECOVERY OPERATIONS.

E. NORMAL PROCEDURE: LITHIUM BATTERY CHARGING, HANDLING, AND STORAGE.
(1) BATTERY CHARGING, HANDLING, AND STORAGE PROCEDURES SHALL BE IAW REFS C, F, MANUFACTURER PROCEDURES, AND APPLICABLE LOCAL PROCEDURES/SOPS.

WARNING
UAS LISTED IN REFS C AND D MAY UTILIZE COMMERCIAL OFF THE SHELF LITHIUM CHEMISTRY BATTERIES. LITHIUM CHEMISTRY BATTERIES HAVE THE POTENTIAL TO RELEASE VAPOR CLOUDS OF CHEMICALLY ACTIVE TOXIC, FLAMMABLE, OR CORROSIVE MATERIALS WHICH MAY CAUSE INJURY TO PERSONNEL, DAMAGE TO EQUIPMENT, AND/OR LOSS OF AIRCRAFT.

F. NORMAL PROCEDURE: LITHIUM BATTERY WATER EXPOSURE.
(1) REMOVE ALL LITHIUM BATTERIES FROM THE SYSTEM.
(2) STORE LITHIUM BATTERIES IN A FIRE RESISTANT CONTAINER AWAY FROM FLAMMABLE SUBSTANCES.
(3) DISPOSE OF BATTERIES IAW APPLICABLE LOCAL HAZMAT PROCEDURES.

WARNING
LITHIUM BATTERIES IMMERSED IN WATER MAY OUTGAS, RESULTING IN OVERHEATING AND/OR FIRE CAUSING DAMAGE TO AIR VEHICLE AND/OR INJURY TO PERSONNEL.

G. NORMAL PROCEDURE: PERSONAL PROTECTIVE EQUIPMENT (PPE).
(1) PROTECTIVE EYEWEAR SHOULD BE WORN WITHIN 25 FEET OF THE AIR VEHICLE DURING GROUND OPERATIONS, LAUNCH, AND RECOVERY OF THE AIR VEHICLE.

WARNING
A CATASTROPHIC AIR VEHICLE FAILURE OR LOSS OF AIR VEHICLE CONTROL MAY RESULT IN INJURY TO PERSONNEL.

(2) HEARING PROTECTION SHOULD BE WORN DURING GROUND OPERATIONS, LAUNCH, AND RECOVERY OF THE AIR VEHICLE.

WARNING
NOISE CHARACTERIZATION TESTING HAS NOT BEEN COMPLETED ON GROUP 1 AND 2 AIR VEHICLE SYSTEMS. PROLONGED EXPOSURE TO AIR VEHICLE NOISE AT CLOSE PROXIMITY MAY CONTRIBUTE TO HEARING LOSS.

(3) WHEN HAND LAUNCHING/RECOVERING, PROTECTIVE GLOVES, LONG SLEEVE JACKET, AND CRANIAL/HELMET WITH EYE PROTECTION SHALL BE WORN.

H. NORMAL PROCEDURE: DEGRADED GPS (IF GPS IS INSTALLED).
(1) PROPER OPERATION OF THE GPS SHALL BE VERIFIED PRIOR TO EACH FLIGHT. THE GPS SHALL BE FREE OF DEGRADING INTERFERENCE (I.E. INTERFERENCE THAT WOULD RESULT IN A LOSS OF GPS) PRIOR TO FLIGHT.
(2) IF GPS JAMMING IS SUSPECTED, THE AVO SHOULD COMMAND THE AIR VEHICLE TO A SAFE ALTITUDE AND EXIT THE AREA OF SUSPECTED JAMMING TO MINIMIZE THE POSSIBILITY OF UNEXPECTED NAVIGATION ERRORS.
(3) DURING FLIGHT IN AN ACTIVE GPS JAMMING ENVIRONMENT, THE AVO SHOULD BE PREPARED TO TAKE MANUAL CONTROL OF THE UAS
AND COMMAND THE AIR VEHICLE TO A SAFE ALTITUDE, LAND, OR EXIT THE AREA OF SUSPECTED JAMMING.

----------------------- NOTE ----------------------------
THE EFFECT OF GPS JAMMING ON THE AIR VEHICLE NAVIGATION SYSTEM HAS NOT BEEN FULLY CHARACTERIZED. IT IS POSSIBLE THAT GPS ALTITUDE AND NAVIGATION REFERENCE CAN BE IN ERROR.

----------------------- NOTE ----------------------------
FLIGHT OPERATIONS WITHOUT GPS, OR WITH DEGRADED GPS DATA, INCREASES AVO WORKLOAD AND INCREASES THE UNCERTAINTY IN REPORTED AIR VEHICLE POSITION. WITHOUT A FUNCTIONING GPS, IT WILL BE NECESSARY TO RELY ON ALTERNATE NAVIGATION TECHNIQUES.

I. NORMAL PROCEDURE: SAFE-FOR-FLIGHT BOX.
A UAS OPERATING AREA OR SAFE-FOR-FLIGHT BOX SHALL BE ESTABLISHED WITHIN THE AIRSPACE AND RANGE BOUNDARIES THAT ENSURES THAT THE AIR VEHICLE IS CONTAINED WITHIN THE AIRSPACE BOUNDARIES AT ALL TIMES. THE FOLLOWING SHOULD BE CONSIDERED WHEN CONSTRUCTING THE UAS OPERATING AREA OR SAFE-FOR-FLIGHT BOX:
(1) ABOVE GROUND LEVEL OPERATING ALTITUDES.
(2) LOSS OF COMMUNICATION/LOSS OF LINK/GPS TIME OUT PERIODS.
(3) LOSS OF COMMUNICATION/LOSS OF LINK PROFILES.
(4) AIR VEHICLE ENGINE-OUT Glide RATIOS.
(5) RETURN HOME PROFILES
(6) AIR VEHICLE MAXIMUM AIRSPEED.
(7) AIR VEHICLE MAXIMUM RANGE/ENDURANCE.
(8) MAXIMUM WIND LIMITS.
(9) FLIGHT TERMINATION PROCEDURES AND FOOTPRINT.
(10) COMMAND AND CONTROL COMMUNICATION RANGES.
(11) RF EMITTERS STAY CLEAR DISTANCES, ETC.

------------------------ NOTE ---------------------------
A SYSTEM FAILURE, ENVIRONMENTAL FACTOR, OR LACK OF UA PERFORMANCE CAN LEAVE THE AIR VEHICLE IN AN UNCONTROLLED STATE RESULTING IN THE VEHICLE UNINTENTIONALLY DEPARTING THE OPERATING AREA OR SAFE-FOR-FLIGHT BOX, AND/OR EXCURSIONS INTO PERSONNEL SAFETY HAZARD KEEPOUT ZONES.

J. NORMAL PROCEDURE: FUEL LEAK CHECKS (UAS WITH NON-ELECTRIC PROPULSION SYSTEMS).
THE AIR VEHICLE SHALL BE CHECKED PRIOR TO EACH FLIGHT FOR FUEL LEAKS, ESPECIALLY IN AREAS NEAR LITHIUM BATTERIES.

----------------------- WARNING ----------------------------
UNDETECTED FUEL LEAKS MAY RESULT IN IGNITION OF FUEL VAPORS UNDER CERTAIN CONDITIONS CAUSING DAMAGE TO OR LOSS OF AIR VEHICLE OR INJURY TO PERSONNEL.

----------------------- WARNING ----------------------------
THE UAS LISTED IN REF C HAVE NOT UNDERGONE SAFETY OF FLIGHT EXPLOSIVE ATMOSPHERE TESTING. A SERIOUS FIRE OR EXPLOSION MAY OCCUR IF THE UAS IS POWERED WHILE FLAMMABLE VAPORS ARE PRESENT DURING GROUND OR FLIGHT OPERATIONS, WHICH MAY CAUSE DAMAGE TO OR LOSS OF AIR VEHICLE AND INJURY OR DEATH TO PERSONNEL.

K. NORMAL PROCEDURE: RF INTERFERENCE AVOIDANCE.
AVOID OPERATION NEAR ANTENNAS OF ACTIVE RADIO TRANSMITTERS,
RADARS, AND SATCOM UPLINK EMITTERS, ESPECIALLY THOSE OPERATING AT HIGH POWER LEVELS (GREATER THAN 1 KW AND ANTENNA GAINS GREATER THAN 20 DBI):

(1) OBSERVE PARA 3.L LIMITS.
(2) THE AVO SHALL CHECK WITH AREA FREQUENCY COORDINATOR TO VERIFY THAT NO HIGH POWERED EMITTERS WILL BE ACTIVE AND CAUSE MAIN BEAM ILLUMINATION OF THE AIR VEHICLE DURING FLIGHT CLOSER THAN PARA 3.L STAND-OFF LIMITS.

-------------------- WARNING ---------------------
NAVAIR HAS NOT CHARACTERIZED THESE UAS FOR SUSCEPTIBILITY TO INTERNAL OR EXTERNAL ELECTROMAGNETIC FIELDS, INCLUDING THOSE PRODUCED BY RADIO TRANSMITTERS AND RADARS. RADIO-FREQUENCY (RF) ENERGY MAY DISRUPT MOTOR CONTROL, GPS RECEIVER FUNCTION, C2 DATALINKS, OR FLIGHT CONTROL WHICH MAY CAUSE LOSS OF AIR VEHICLE CONTROL, OR DEGRADED NAVIGATION. OPERATION NEAR ANTENNAS OF ACTIVE RADIO TRANSMITTERS AND SATCOM UPLINKS, AND RADARS, ESPECIALLY THOSE OPERATING AT HIGH POWER LEVELS (GREATER THAN 1 KW AND ANTENNA GAINS GREATER THAN 20 DBI) MAY RESULT IN LOSS OF AIR VEHICLE, INJURY TO PERSONNEL, AND/OR DAMAGE TO PROPERTY/SHIP.

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L. NORMAL PROCEDURE: FREQUENCY COORDINATION.
THE AVO SHALL COORDINATE FREQUENCY USAGE WITH ANY OTHER UAS OR MANNED SYSTEMS IN THE OPERATING AREA IAW LOCAL SPECTRUM MANAGEMENT PROCEDURES.

-------------------- WARNING --------------------
COMMAND AND CONTROL DATALINK INTERFERENCE MAY OCCUR WHEN OTHER UAS CONFIGURED WITH SIMILAR COMMAND AND CONTROL DATALINKS ARE OPERATING WITHIN THE SAME FREQUENCY BANDS OR HOPSETS, AND ARE WITHIN RECEPTION RANGE. DATALINK INTERFERENCE MAY CAUSE LOSS OF THE COMMAND AND CONTROL DATALINK AND MAY RESULT IN LOSS OF THE AIR VEHICLE.

-------------------- NOTE --------------------
UAS DATALINKS MAY BE IMPAIRED BY OPERATION OF MULTIPLE UAS AT THE SAME SITE.

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M. NORMAL PROCEDURE: LASER OPERATIONS.
LASER OPERATIONS PROCEDURES SHALL BE IAW REF K (SEE PARA 7.I).

N. NORMAL PROCEDURE: LOSS OF COMMAND AND CONTROL LINK AVOIDANCE
(1) THE AIR VEHICLE OPERATOR SHOULD AVOID INTENTIONAL FLIGHT IN A LOSS-OF-LINK CONDITION.
(2) AIR VEHICLE OPERATOR SHOULD CONFIRM AIR VEHICLE AUTOMATIC LOST LINK SETTINGS (E.G., RETURN HOME, LAND) PRIOR TO FLIGHT.
(3) COUNTER-UAS TESTING SHALL BE IAW PARA 3.Q.

-------------------- WARNING --------------------
LOSS OF LINK MAY RESULT IN COLLISION WITH AIRCRAFT, FLIGHT INTO TERRAIN/SHIP, INJURY OR DEATH TO PERSONNEL, AND/OR LOSS OF AIR VEHICLE.

-------------------- WARNING --------------------
OPERATION BETWEEN HIGH-RISE BUILDINGS OR IN URBAN CANYONS IN A CITY ENVIRONMENT MAY RESULT IN LOSS OF THE VEHICLE AND/OR INJURY TO PERSONNEL DUE TO HIGH WIND GUSTS, REDUCED ROOM TO MANEUVER, LOSS OF LINK, AND A LACK OF
COLLISION AVOIDANCE CAPABILITY.
----------------------- NOTE ---------------------------
FLIGHT BEYOND VISUAL LINE-OF-SIGHT OR BEHIND OBJECTS AND TERRAIN FEATURES INCREASES THE RISK OF LOSS OF LINK.
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O. NORMAL PROCEDURE: WAVEOFF.
THE AVO SHALL BE PREPARED TO RECEIVE A WAVEOFF COMMAND FROM THE SAFETY OBSERVER AND INITIATE A WAVEOFF IN A TIMELY MANNER.
---------------------- WARNING -------------------------
EXCESSIVE DELAY INITIATING A WAVEOFF MAY RESULT IN LOSS OF AIR VEHICLE, INJURY OR DEATH TO PERSONNEL AND/OR DAMAGE TO PROPERTY/SHIP.
----------------------- NOTE ---------------------------
THE SAFETY OBSERVER SHOULD CONSIDER THE TIME REQUIRED TO ASSESS A WAVEOFF CONDITION AND COMMAND A WAVEOFF.
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P. NORMAL PROCEDURE: RECOVERY PARAMETER CHECKS.
WHEN INPUTTING OR CHANGING RECOVERY PARAMETERS AND SETTINGS, THE AVO SHALL VERIFY THE SETTINGS TO BE CORRECT AND PROPER PRIOR TO SENDING TO THE AIR VEHICLE.
---------------------- WARNING -------------------------
INCORRECT ENTRY OF RECOVERY PARAMETERS CAN RESULT IN LOSS OF THE AIR VEHICLE, INJURY TO PERSONNEL, AND/OR DAMAGE TO PROPERTY/SHIP.
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Q. NORMAL PROCEDURE: SHIPBOARD LAUNCH AND RECOVERY PROCEDURES.
SHIPBOARD LAUNCH AND RECOVERY PROCEDURES SHALL BE IAW REF J.

R. NORMAL PROCEDURE: VISUAL LINE OF SIGHT OPERATIONS (VLOS).
THE AVO OR QUALIFIED SAFETY OBSERVER SHALL BE ABLE TO SEE THE AIR VEHICLE AT ALL TIMES. VLOS SHALL BE ACCOMPLISHED AND MAINTAINED BY UNAIDED VISION, EXCEPT VISION THAT IS CORRECTED BY THE USE OF EYEGLASSES OR CONTACT LENSES. THE AVO OR SAFETY OBSERVER MAY USE VISION AIDS SUCH AS BINOCULARS MOMENTARILY TO ENHANCE SITUATIONAL AWARENESS (E.G., TO AVOID FLYING OVER PERSONS OR CONFLICTING WITH OTHER AIRCRAFT).
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S. ADDITIONAL WARNINGS, CAUTIONS AND NOTES:
(1) -------------------- WARNING ----------------------------
CATEGORY 3 UAS HAVE AN INCREASED LIKELIHOOD OF FLIGHT CRITICAL FAILURES WHICH MAY LEAD TO LOSS OF CONTROL OR LOSS OF AIR VEHICLE, INCREASING THE RISK OF INJURY OR DEATH TO PERSONS ON THE GROUND. THE AIR VEHICLE OPERATOR IS RESPONSIBLE FOR ENSURING THAT AIR VEHICLE OPERATIONS WILL POSE NO UNDUE HAZARD TO OTHER AIRCRAFT, PEOPLE OR PROPERTY/SHIP IN THE EVENT OF LOSS OF CONTROL OF THE AIRCRAFT FOR ANY REASON. SEE PARA 7.O.
(2) --------------------- WARNING --------------------------
THIS INTERIM FLIGHT CLEARANCE (IFC) BASES ITS LAUNCH, RECOVERY AND FLIGHT LIMITATIONS ON SOURCE DATA THAT HAS NOT BEEN VALIDATED BY NAVAIR. FLIGHT CHARACTERISTICS AND PERFORMANCE OF THE UAS LISTED IN REF S C AND D HAVE NOT BEEN INDEPENDENTLY ASSESSED BY NAVAIR OR VERIFIED AGAINST ESTABLISHED AIRWORTHINESS STANDARDS. LOSS OF AIR VEHICLE CONTROL RESULTING IN LOSS OF AIR VEHICLE MAY OCCUR WHILE
OPERATING WITHIN THE PARA 3 USAGE ENVELOPE.

(3) ------------------------ WARNING ------------------------
The autopilot software has not been validated by NAVair against established airworthiness standards. NAVair has not assessed software and/or existing defects that affect flight operations. Loss of air vehicle control resulting in loss of vehicle, injury or death to personnel, and/or damage to property/ship may occur while operating within the Para 3 usage envelope.

(4) --------------------- WARNING ---------------------------
Air vehicle operator situational awareness is reduced during multi-vehicle operations. There is an increased risk of loss of control, mid-air collisions, and/or loss of air vehicles which may result in injury to personnel and damage to property. AVO procedures, software, and hardware capabilities for multi-vehicle operations have not been validated by NAVair.

(5) --------------------- WARNING ---------------------------
Environmental qualification of the UAS listed in Refs C and D has not been conducted. Operations in rain may result in loss of air vehicle.

(6) ---------------------- NOTE ----------------------------
Successful completion of an EMC SOFT is a check, but not a guarantee, that system operation will not be disrupted by its own, or nearby, electronic equipment.

(7) --------------------- NOTE -----------------------------
For night operations in NAS outside of restricted, warning, or prohibited areas, the UAS shall be equipped with lighted anti-collision lighting visible from a distance of not less than 3 statute miles. The AVO may reduce the intensity of anti-collision lighting if, because of operating conditions, it is in the interest of safety to do so.

(8) --------------------- NOTE -----------------------------
All anomalies observed with the UAS listed in Refs C and D that result in, or have the potential of causing, an air vehicle mishap shall be reported to class desk (see Para 6.A).

5. TIME PERIOD: This interim flight clearance expires 31 Aug 2020.

6. POINTS OF CONTACT:
   A. AL STUMM, AIRWORKS CLASS DESK, TEL: 301-342-8578, EMAIL: ALBERT.STUMM@NAVY.MIL.
   B. ZACK BARFORD, AIRWORKS UAS TEAM LEAD, TEL: 301-342-0524, EMAIL: ZACHARY.S.BARFORD.CTR@NAVY.MIL.
   C. PAMELA MADDEN, FLIGHT CLEARANCE PROJECT LEAD, TEL: 301-757-4900, EMAIL: PAMELA.MADDEN.CTR@NAVY.MIL.
   D. AIRWORTHINESS GLOBAL CUSTOMER SUPPORT TEAM, TEL: 301-757-0187, EMAIL: AIRWORTHINESS.GM.FCT@NAVY.MIL.

7. OTHER REMARKS:
   A. Activities not listed in the to line of this message must receive a readdressal for action from the ACC or DAA prior to use.
   B. This IFC applies only to Group 1 and 2 fixed wing UAS for which the ACCS/DAAS/ARCS listed in Reqs C and D are the custodian.
   C. A list of approved non-POR Group 1 and 2 fixed wing UAS is
PROVIDED IN REF C. CONTACT AIRWORKS UAS CLASS DESK (PARA 6.A) FOR CURRENT COPY. THE DAA, ACC, OR ARC CAN REQUEST APPROVAL FOR NEW UAS TO REF C BY CONTACTING THE AIRWORKS UAS CLASS DESK. REQUESTS FOR NEW UAS SHALL INCLUDE THE INFORMATION LISTED IN REF C DATA SHEETS.

D. REF D PROVIDES A MASTER LISTING OF APPROVED DEVELOPMENTAL ACTIVITY GROUP 1 AND 2 UAS. CONTACT AIRWORKS UAS CLASS DESK (PARA 6.A) FOR CURRENT COPY.

E. EACH DEVELOPMENTAL ACTIVITY SHALL MAINTAIN A LIST OF LOCALLY APPROVED DEVELOPMENTAL UAS. LOCALLY APPROVED DEVELOPMENTAL ACTIVITY UAS SHALL UTILIZE ONLY REF G APPROVED AUTOPILOTS, GCS, TABLETS/E-DEVICES AND RC CONTROLLERS. THE LOCALLY APPROVED UAS LIST SHALL CONTAIN A LISTING OF DEVELOPMENTAL UAS THAT ARE NOT LISTED IN REF C. DEVELOPMENTAL ACTIVITY ACCS/DAAS/ARCS SHALL PROVIDE UPDATES TO AIRWORKS UAS CLASS DESK (PARA 6.A) AS UPDATES ARE ISSUED.

F. REFS C THROUGH K WILL BE UPDATED AS CHANGES OCCUR. AIRWORKS CLASS DESK (PARA 6.A) WILL PROVIDE COPIES AS UPDATES ARE ISSUED.

G. THIS IFC MAY ONLY BE USED WHEN THE UAS IS OPERATED AS A DEPARTMENT OF THE NAVY PUBLIC AIRCRAFT.

H. A LISTING OF APPROVED LAUNCH AND RECOVERY EQUIPMENT, STORES CARRIAGE AND RELEASE MECHANISMS AND ASSOCIATED STORES AND APPLICABLE LIMITATIONS, PROCEDURES, WARNINGS CAUTIONS AND NOTES IS PROVIDED IN REFS C, D, H, AND I. CONTACT AIRWORKS UAS CLASS DESK (PARA 6.A) FOR CURRENT COPIES. THE DAA, ACC, OR ARC CAN REQUEST APPROVAL FOR SPECIFIC LAUNCH AND RECOVERY EQUIPMENT, STORES CARRIAGE AND RELEASE MECHANISMS AND STORES FOR SPECIFIC UAS BY CONTACTING THE AIRWORKS CLASS DESK. APPLICABLE LIMITATIONS, PROCEDURES, WARNINGS CAUTIONS AND NOTES WILL BE PROVIDED BY AIRWORKS CLASS DESK AS PART OF THE APPROVAL PROCESS.


K. REF J CONTAINS A LIST OF ALL APPLICABLE SOPS. EACH DEVELOPMENTAL ACTIVITY IS REQUIRED TO ADHERE TO THE MOST RESTRICTIVE OF THE IFC, ITS OWN SOP AND THE AIRWORKS OPERATING PROCEDURE, BOTH OF WHICH ARE LISTED IN REF J. UPDATES TO
L. This IFC may be used as a statement of airworthiness in support of FAA COA or COA via notification application IAW REF J for operations in Class G and D airspace, Class E surface area airspace, and prohibited areas. Requests to utilize this IFC in support of FAA COA application for operations in Class B, Class C, or Class E enroute or transition airspace will be evaluated by NAVAIR on a case-by-case basis to ensure safety of flight. Contact AirWorks Class Desk to request approval to use this IFC in support of FAA COA application for operations in Class B, Class C, or Class E enroute or transition airspace, or Class E surface areas at altitudes greater than 400 ft AGL. COA Application information shall be provided with each request. NAVAIR will document approval to use this IFC as a statement of airworthiness to the FAA in support of the specific requested COA usage case. Approvals will be issued by NAVAIR Air 4.0P to the requesting DAA/ACC/ARC with info to applicable FAA NAVREP.

M. The Aircraft Reporting Custodian (ARC) is responsible for obtaining radio frequency spectrum approval for operation, command, and control of the UAS in accordance with applicable Navy policy.

N. The Aircraft Reporting Custodian is responsible for compliance with Refs L and M UAS policies and operations including general flight rules, aircrew qualifications, and aeromedical qualifications.

O. The Air Vehicle Operator is responsible for assessing operational risks, including but not limited to hazards to personnel (operators, safety observers, and third parties on the ground) during ground, launch, flight, and recovery operations; midair collision risks; and airspace containment risks. Operational risk shall be assessed by the Air Vehicle Operator IAW Ref P.

P. The ARC is responsible for compliance with the Naval Aviation Safety policies, provisions, and reporting requirements IAW Ref Q.

Q. The UAS shall be operated and maintained IAW applicable operating manuals, maintenance manuals, service bulletins, safety bulletins, and operational advisories, software and firmware updates for each UAS T/M/S. Software and firmware updates shall be IAW Refs C and G.

R. The UAS shall be maintained IAW applicable manufacturer maintenance, overhaul, replacement, inspection and life limit requirements for the UAS. The ARC is responsible for documenting and maintaining records of UAS maintenance, preventive maintenance, and status of replacement/overhaul component parts. Refer to Ref R for policy.

S. Cybersecurity safety and cyber vulnerabilities of Refs C and
D. UAS have not been assessed. Command and control and sensor data links are not secure and may be susceptible to exploitation. Images, video and/or flight records (including position information) may be uploaded to unsecure servers in foreign countries if air vehicle, ground station, e-device, remote controller, or laptop computers are connected to the internet.

T. Per Ref S, the DAAS and ACCS listed in Refs C and D acknowledge higher probability of loss (HPOL) and acceptance of risk of material loss of the UA for the specific UAS listed in Refs C and D.

U. Per Ref S, this flight clearance provides a NAVAIR UAS category 3 airworthiness certification subsequent to an engineering review and risk assessment to ensure safety of flight and reduce risk to personnel and property/ship, and environment.

V. This IFC does not authorize aircraft/system modification, nor does it satisfy NAVAIR requirements for configuration management. As directed by OPNAVINST 4790.2J, refer to CNAFINST 4790.2C CH-2 for policy guidance on configuration management and mod authority.

W. Information regarding the airworthiness process, including a listing of all current interim flight clearances, NATOPS and NATIP products issued by NAVAIR 4.0P, can be found at our website: Airworthiness.NAVAL.NAVY.MIL.

X. E-POWER FOLDER 1450948, TRACKING NUMBER 84883.//