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IN REPLY REFER TO

NAVAIRINST 13034.1C
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NAVAIR INSTRUCTION 13034.1C

From: Commander, Naval Air Systems Command

Subj: FLIGHT CLEARANCE POLICY FOR AIR VEHICLES AND AIRCRAFT SYSTEMS

- Ref:
- (a) OPNAVINST 3710.7T, NATOPS General Flight and Operating Instructions
 - (b) OPNAVINST 3510.15, Air Naval Tactics, Techniques And Procedures (Air NTTP) Manuals And Naval Aviation Technical Information Product (NATIP) Program
 - (c) NA 00-25-300, NAVAIRSYSCOM Technical Directives System
 - (d) NAVAIRINST 13100.15, Engineering Technical Review of Commercial Derivative Aircraft Programs
 - (e) OPNAVINST 4790.2H, Naval Aviation Maintenance Program (NAMP)
 - (f) NAVAIRINST 5100.11, Research and Engineering Technical Review of Risk Process and Procedures for Processing Grounding Bulletins
 - (g) NAVAIRINST 13030.2, Tailored Application of Airworthiness Standards for Special Purpose Configurations of Aircraft and Weapons Systems
 - (h) NAVAIRINST 4130.1C, Naval Air Systems Command Configuration Management Policy
 - (i) NAVAIRINST 5600.5B, System for Preparation and Issuance of Interim Changes to NATOPS Flight Manuals
 - (j) NWP 1-01, Naval Warfare Publications Guide
 - (k) COMOPTEVFORINST 3511.1C, Aircraft Tactical Manual (AIRTAC)
 - (l) NAVAIRINST 4355.19B, Systems Engineering Technical Review Process
 - (m) MIL-HDBK-516, Air Worthiness Certification Criteria

- Encl:
- (1) Flight Clearance Process
 - (2) Information Required for Determination of Flight Operating Limitations
 - (3) Flight Clearance Request Formats and Sample Flight Clearance
 - (4) Acronyms

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1. Purpose. To establish policy, responsibilities, and procedures for the process within the Naval Air Systems Command (NAVAIR) for granting flight clearances for air vehicles and aircraft systems.

2. Cancellation. NAVAIRINST 13034.1B of 24 October 2000 and NAVAIRINST 13034.2 of 15 August 2000. Since this is a major revision, changes are not indicated.

3. Scope. This instruction applies to all manned and unmanned air vehicles and aircraft systems owned or leased by the Navy or United States Marine Corps (USMC), including pre-accepted aircraft and public use aircraft modified by/for the Navy. This includes, but is not limited to all systems in-service and under development. Agencies covered by this instruction include but are not limited to NAVAIR, Deputy Commander for Acquisition and Operations (AIR-1.0); the aviation Program Executive Offices (PEO) for Air Anti-Submarine Warfare, Assault and Special Mission Programs (PEO(A)); the PEO for Tactical Aircraft Programs (PEO(T)); and the PEO for Strike Weapons and Unmanned Aviation (PEO(W)). It also applies to all Assistant Secretary of the Navy for Research, Development and Acquisition-designated aviation acquisition programs being developed or acquired for U.S. Navy and/or U.S. Marine Corps (USMC) use, and to Fleet units that own, operate, or manage Navy or USMC aircraft systems. A flight clearance will be issued only for an aircraft system owned or leased by the Navy or USMC. Only by exception will a flight clearance be issued for a non-Navy/USMC aircraft system. Examples of exceptions are listed in Paragraph 5e of this instruction.

a. Chapter VII of reference (a) stipulates that, "aircraft shall not be operated in a nonstandard configuration or outside the limits of Naval Air Training and Operating Procedures Standardization (NATOPS) without airworthiness approval in the form of a flight clearance document from NAVAIR." Paragraph 2.2.2.d(3) of reference (a) further states that, "Commander, Naval Air Systems Command (COMNAVAIRSYSCOM) has cognizance over all aircraft equipment limitations and configurations."

b. This instruction applies to:

(1) the issuance of flight clearances and flight-operating limitations for manned air vehicle operation, stores and store suspension equipment employment, and Aviation Life Support Systems (ALSS) utilization, whenever the aircraft system configuration, flight envelope, or operation is nonstandard;

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(2) the issuance of flight clearances and flight-operating limitations for unmanned aircraft systems including both their airborne and surface based components, which includes but is not limited to aerial targets and Unmanned Aerial Vehicles (UAV)/Unmanned Aircraft Systems (UAS), whenever the aircraft system configuration, flight envelope, or operation is nonstandard;

(3) new and/or modified aircraft system configurations owned or leased by the Navy, including hardware, firmware, and software changes, and expansion of flight envelopes;

(4) developmental testing, operational testing, Follow-on Operational Test and Evaluation (FOT&E), and Fleet introduction, pending promulgation of the permanent flight clearance in the NATOPS flight manual and the Naval Aviation Technical Information Product (NATIP), if appropriate, via the processed defined in references (a) and (b) respectively; and

(5) Fleet operations following modification or envelope expansion, pending issuance of an approved/published NAVAIR formal Technical Directive (TD) or equivalent per reference (c), or change to the aircraft system's permanent flight clearance documents, the NATOPS and the legacy Tactical Manual (TACMAN)/NATIP.

c. To minimize duplicative effort, the flight clearance process shall utilize data from the Original Equipment Manufacturer (OEM) and other airworthiness certification agencies such as the Federal Aviation Administration (FAA), U.S. Air Force, and U.S. Army to the maximum extent possible in establishing airworthiness and equipment limitations for commercially-derived or public use aircraft purchased/leased by the Navy. The U.S. Navy maintains a mutual acceptance of airworthiness certifications from the U.S. Air Force and U.S. Army for air vehicle systems, subsystems, and allied equipment to the configuration, flight envelope, service life, maintenance plan, and usage authorized by the originating service. The originating service will provide engineering source data, operating and service manuals that establish and document the prescribed limits of airworthiness to the maximum extent possible. The receiving service is responsible for assuring airworthiness for modifications to the original configuration, flight envelope, or usage. For a commercial derivative aircraft (CDA) or a joint service aircraft, the class desk/integrated product team (IPT) lead shall convene a pre-planning meeting

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with AIR-4.0P and appropriate engineering competencies to determine the applicability of reference (d) or the joint service memorandum of agreement to the Navy variant, and determine additional data requirements, if applicable, to obtain a Navy flight clearance. The certification provided by the class desk/IPT to ensure equivalent usage will be forwarded to appropriate engineers for concurrence.

d. The interim flight clearance process as defined in enclosure (1) applies to both manned aerial vehicles and UAV/UAS with special considerations given to UAV/UAS as described in the process narrative.

e. This instruction does not supersede or take precedence over the process for formal certification of readiness for developmental testing, operational testing, or recertification for FOT&E required by applicable acquisition directives.

f. NAVAIR flight clearances are only valid when aircraft are maintained in accordance with approved maintenance and structural life management plans.

4. Background

a. NAVAIR, PEO(T), PEO(A), and PEO(W) are responsible for the acquisition, integration, support, and development of naval aircraft systems. As weapon systems develop and mature, they usually undergo configuration changes and/or expansions of the operational flight envelope. At each step, from first flight through retirement of the platform, airworthiness must be assured and certified by a NAVAIR Flight Clearance or a TD. A flight clearance can either be interim or permanent. An interim flight clearance provides temporary flight authorization for an aircraft system operating in a nonstandard configuration, envelope, or operation, pending promulgation of a change to the permanent flight clearance documents. Interim flight clearances are commonly used in the research, development, test and evaluation (RDT&E) community, but can also be used on a temporary basis for Fleet operations. Permanent flight clearances come in the following forms: NATOPS, NATIP/legacy TACMAN, or operator's manual. The NATOPS provides standardized approved flight limitations and procedures for standardized (production) configurations. The NATIP provides additional weapons and stores related standardized approved flight limitations for standardized (production) configurations. Per reference (e), NAVAIR is the only authority to approve, modify or withhold modification of U.S. Naval aeronautical equipment.

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In accordance with reference (e), the Aircraft Controlling Custodian (ACC)/Type Commander (TYCOM) has the authority to modify one aircraft under their command however, a NAVAIR interim flight clearance must be obtained to fly an aircraft system in that nonstandard configuration. Following reference (a), Chapter VII, Naval aircraft shall not be operated in a nonstandard configuration or outside the limits of NATOPS without airworthiness approval in the form of a flight clearance document from NAVAIR. AIR-4.0P may also issue flight restrictions, not to include grounding bulletins or red stripes, and in this case must follow the guidelines of reference (f). AIR-4.1 ensures that the systems engineering review is conducted for the engineering change proposal, and AIR-4.0P ensures the airworthiness review is conducted for the flight clearance process. The airworthiness process is not part of the configuration management and control process, and neither process authorizes the other.

b. UAV/UAS vary greatly in size, weight and complexity. Because they are unmanned, safety of flight risks associated with loss of aircrew may not apply. However, as with manned aircraft, safety of flight risks associated with personnel, damage to equipment, property, and/or environment must be considered. As such, the airworthiness review process may be tailored for this unique application. Tailoring may be appropriate when a UAV/UAS is designed to be "expendable", will conduct missions with "minimum life expectancy", or are limited to science and technology experimentation. Tailoring of the engineering design requirements should occur between the class desk or equivalent and the engineering competency representatives early in the acquisition/planning phase. These requirements may assist in formation of the Contract Data Requirements (CDR). In this case, the class desk must adequately define the expendability of the aircraft so that requirements may be properly tailored. The class desk, as part of the flight clearance planning meeting, should reach an agreement with these performance monitors on data requirements to support the airworthiness review process and document these in an Engineering Data Requirements Agreement Plan (E/DRAP). Consideration needs to be given to the environment in which the UAV/UAS will be operated (controlled test range, national airspace, Fleet usage, including ship based applications), the airframe life the air vehicle is designed for, the "expendability" of the UAV/UAS (a cost issue for the Program Manager) and the risks associated with operating the UAV/UAS in close proximity to the ground control system, personnel, property or other equipment. In some cases where analysis

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indicated that the system is safe with respect to personnel and non-program property, but that based on the available data there are questions regarding the airworthiness of the system, then a clearance can be issued stating such. It should not be assumed that a UAV/UAS will have relaxed engineering requirements simply because the air vehicle is unmanned since safety of flight concerns and risks may necessitate thorough engineering design requirements. The class desk should address these issues early in the airworthiness process to ensure the design, application and mission of the UAV/UAS is understood by engineering and the airworthiness office. Ideally, the data requirements of the E/DRAP should be reflected as CDRs in the contract.

c. Special purpose configurations of Navy aircraft and weapons systems not intended for Fleet introduction, but intended for limited operation in a controlled test and evaluation environment, may use the tailored application of airworthiness standards defined in reference (g). In this case, the flight clearance provides an airworthiness and technical risk assessment for that limited environment and test duration alone.

d. Some commercial-derivative aircraft leased or owned by the Navy will be operated in exactly the same operating envelope and manner of usage as exists in the commercial environment, while others will have Navy unique requirements. Standards for the technical engineering review of commercial-derivative aircraft are defined in reference (d).

e. The flight clearance process involves an independent engineering assessment of airworthiness, safety of flight, and unusual risk.

(1) Airworthiness determines the property of an air system configuration to safely attain, sustain and terminate flight in accordance with approved usage limits.

(2) Safety of flight determines the property of an air system configuration to safely attain, sustain and terminate flight within prescribed and accepted limits for injury/death to personnel and damage to equipment, property and/or environment.

(3) In some cases where risk is determined to be above normal as determined by engineering or the Flight Clearance Officer (FCO) for the intended mission (flight test, air show, Fleet use, etc.), a Hazard Risk Analysis (HRA) may be required

and a Hazard Risk Index (HRI) will be included in the flight clearance.

5. Policy

a. A flight clearance is required when the aircraft system will:

(1) commence its first test flight, and/or subsequent developmental test flights in a nonstandard configuration or operating envelope;

(2) undergo developmental testing, operational testing, FOT&E or Fleet operations with a preliminary NATOPS; or

(3) operate in the Fleet in nonstandard configurations or envelopes not approved by the NATOPS, legacy TACMAN/NATIP, operator's manual, a NAVAIR issued TD (which would include an update to the maintenance manual), or for commercial derivative aircraft NAVAIR approved OEM flight manuals, OEM maintenance manuals, or formal OEM technical directives (such as Service Bulletins, Aircraft Service Changes). Once the changes to the permanent flight clearance documents (NATOPS, legacy TACMAN/NATIP), approved OEM manuals, or the TD are issued and available to Fleet forces, an interim flight clearance is no longer required.

b. A flight clearance is valid only for the specific configurations and flight envelopes/operations specified in the clearance. Each flight clearance is a stand-alone document. However, there are cases when multiple flight clearances apply to the same model/type/series or bureau number aircraft. Care must be taken to ensure that when multiple flight clearances are applicable, the most restrictive set of limits are observed to ensure airworthiness standards are not compromised. Any change to the specified configuration or flight operation requires issuance of a separate or amended flight clearance. Some examples of configuration and envelope changes requiring flight clearance include, but are not limited to:

(1) structural and material changes.

(2) modification to the exterior contour/mold line of the air vehicle (addition/removal of antenna, wing fence, ventral fin, vortex generator, air induction system, auxiliary inlets, etc.).

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(3) carriage and release of stores, mixed loads, out of sequence release, or expanded limitations not specifically authorized by legacy TACMAN/NATIP or NATOPS. This shall include:

(a) deviations in store mass properties that exceed limits by the following;

1. weight \pm 5%
2. center of gravity (CG) + 0.5 inches, and
3. mass moments of inertia + 10%

(b) changes in autopilot software affecting separation characteristics; and

(c) changes in structural properties affecting load paths.

(4) modification to weapons release/firing system, including stores management system and associated weapons system software.

(5) modification to the flight control system, including software revisions.

(6) new or modified propulsion system or its control system, including software.

(7) modification of the displays, annunciation or critical information presented to the aircrew or operator which may affect situational awareness, aircraft control, weapon/store release and weapon system employment.

(8) installation of equipment, including Non-Developmental Items (NDI) or Commercial-Off-The-Shelf (COTS) systems, mounted to the air vehicle (whether interior or exterior) that is not part of the configuration authorized by NATOPS.

(9) modification of any aircraft subsystem interfacing with and affecting flight operations, propulsion, or weapons control, e.g., mission computer, radar, and navigation, warning systems. With regard to mission planning systems. When required, flight clearances for mission planning systems shall be requested by the platform making use of the system. If a

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mission planning system produces an artifact that, when loaded into the aircraft computer, affects flight controls, autopilot, automatic weapons release, etc. that is not already covered in NATOPS/NATIP or another flight clearance document, then a flight clearance is required. When no airworthiness or safety of flight impact is present, no flight clearance is required. For mission planning systems the platform class desk officer shall determine the need for a flight clearance with input from the weapons and/or mission planning system class desk. If the platform class desk has any doubt, the class desk should request advice from AIR-4.OP. AIR-4.OP will provide advise according to prevailing policy and best engineering practices.

(10) modification of the ALSS.

(11) evaluation of crosswind landing or wet runway landing limits, emergency procedures, structural or flight control limits, wind envelopes, dynamic interface limits, or helicopter external lift/cargo hook system/tow limits.

(12) flight test instrumentation, including, but not limited to wingbooms, nosebooms, sensitive gauges and camera pods.

(13) intentional operation in degraded mode for test purpose not covered by NATOPS (e.g., simulation of partial loss or malfunction of flight control system, engine, avionics, etc.), this includes testing of the failure mode and establishing limits and envelopes for this mode.

(14) use of flight test techniques and/or procedures that are non-standard. Non-standard techniques/procedures are those that are planned for flight test and are not generally accepted by the aviation community in a formal publication such as the United States Naval Test Pilot School or USAF Flight Test Manuals, equivalent Non-DoD Government Agency Manuals (such as NASA), published Industry Standards, or Navy program unique flight test practices and guidelines agreed to between the appropriate engineering competency and the test team such as those delineated in the F/A-18E/F Maneuver Test Library. Examples of "standard" techniques include pitch/roll/yaw doublets at constant frequency or amplitude. An example of a "non-standard" technique would include a pitch/roll/yaw doublet at increasing frequency and amplitude.

(15) carry-on, carry-off equipment that either interfaces directly with aircraft systems and/or has potential to interfere

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with aircraft systems. Per reference (a) crew/passengers shall not operate electronic equipment/battery powered devices such as radios, tape players, razors, calculators, etc, without approval of the pilot in command while the aircraft is in flight. Cellular telephones shall not be operated in naval aircraft while airborne.

(16) any changes in software. Software changes are divided into different levels according to the magnitude of the paragraph 6 of this instruction. Subsystem modifications that do not interface or affect flight operations, propulsion, or weapons control, such as User Data Files changes generally do not require a flight clearance.

(17) any change to a UAV/UAS or target system. This "system" includes the ground control station, data links, flight control system, communications systems/links, etc., as well as the air vehicle. Changes include both hardware and/or software. A flight clearance is only required under these circumstances when the UAV/UAS or target air vehicle is Navy owned or leased regardless of the ownership of any other part of the "system". A flight clearance is not required when a change is made to any part of the "system" (Navy owned or not) unless the air vehicle is also Navy owned/leased.

c. A flight clearance does not:

- (1) authorize operation of the aircraft system;
- (2) authorize modification of the aircraft system;
- (3) authorize installation of equipment;
- (4) grant exemption from the formal NAVAIR configuration management process defined in reference (h);
- (5) constitute a safety review, such as those performed by the Naval Safety Center, or imply that such a review has been performed;
- (6) indicate adequate sponsorship/funding;
- (7) assign aircraft or authorize aircrews or operators;
- (8) guarantee the modification or aircraft system will perform its intended function;

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(9) indicate adequate logistics support;

(10) obviate the need for coordination with the facility, range, or ship to conduct operations; nor

(11) authorize RDT&E ground or flight testing without an approved NAVAIR test plan.

d. For manned or unmanned fixed wing aircraft, the threshold for the requirement for a flight clearance is when there is intent for flight or the potential for flight as in the case of high-speed taxi. For manned and unmanned rotary wing or tilt-rotor aircraft, the threshold for the requirement of a flight clearance is engagement/turning of rotors.

e. A flight clearance will be issued only for an aircraft system owned or leased by the Navy or USMC. Only by exception will a flight clearance be issued for a non-Navy aircraft system. Exceptions include but are not limited to:

(1) COMNAVAIRSYSCOM has entered a formal agreement to act as the flight clearance authority for the subject vehicle and/or;

(2) a contractor or non-Navy owned/leased air vehicle is operated from/near Navy ships or facilities and, at the discretion of the ship/facility, is required to obtain a flight clearance from NAVAIR. Note: Any Navy owned or leased air vehicle operated at a non-Navy owned range does require a flight clearance.

f. A flight clearance recommendation may be issued for non-Naval aircraft system customers who wish to utilize the Navy airworthiness process. In this case, the airworthiness review will be handled in the same manner as for a flight clearance; but a flight clearance recommendation will be issued to the requesting agency for acceptance and use at their discretion.

g. A flight clearance is not required for UAV aircraft designed and operated in compliance with the Academy of Model Aeronautics National Model Aircraft Safety Code.

h. An interim flight clearance is always temporary and shall expire upon completion of a given event or time as determined by the issuing flight clearance authority, or when it becomes a permanent flight clearance by promulgation of a change to the

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NATOPS, NATIP, or TACMAN via the processes defined in reference (a) and reference (b) respectively.

i. Conflict shall be resolved at the lowest level possible, with the Assistant Commander for Research & Engineering (AIR-4.0) providing final adjudication.

6. Definitions

a. Aircraft Controlling Custodian (ACC). 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 CNO.

b. Aircraft Owner. This term usually applies to the appropriate TYCOM, ACC, or ARC, but in the case of UAV/UAS some systems are procured, tested and managed outside of the established ACC/ARC structure. In this case, the owner shall be defined as the head of the agency responsible for procuring and managing the system. Examples of this have included the Marine Corps Warfighting Lab and the Naval Research Lab.

c. Aircraft Reporting Custodian (ARC). 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.

d. Aircrew. Personnel located within the air vehicle with duties assigned to operate or assist in the aircraft system operation.

e. Airworthiness. The property of an air vehicle/aircraft system configuration to safely attain, sustain, and terminate flight in accordance with approved usage limits.

f. Aviation Life Support System (ALSS). Equipment required for aircrew to operate aircraft and for aircrew flight safety including aircraft escape system, special environmental protective system, personal parachute system, aviator's personal protective and survival equipment, aircrew mounted mission systems (e.g., night vision goggles), search and rescue gear, and aircraft fixed seat system. The man-mounted ALSS standard configuration is identified in the Aviation-Crew Systems Technical Manual for Aircrew Protective Equipment, NAVAIRSYSCOM Document 13-1-6.7-1.

g. Aircraft System. A manned or unmanned fixed wing, rotary wing, tilt rotor craft, or vertical/short takeoff and landing air vehicle, including onboard hardware, firmware, and software, equipped with or without stores. Store configuration is considered to be part of the aircraft system. The ground control station, launch and recovery, and data link systems for unmanned aircraft are also part of the aircraft system.

h. Commercial-Derivative Aircraft (CDA)/Aircraft System. Any aircraft or system of commercial origin having a basic design which can be adapted to perform specific Navy operational or non-operational missions and which has been previously certified for commercial use by the FAA, or other equivalent foreign agencies (such as the European Joint Aviation Authorities).

i. Flight Clearance. There are two categories of flight clearances; interim and permanent. An interim flight clearance is temporary approval for flight of an aircraft system in a nonstandard configuration or operation outside the envelopes defined in NATOPS and/or legacy TACMAN/ NATIP. The permanent flight clearance is an aircraft system's NATOPS and NATIP/legacy TACMAN. The flight clearance is evidence that an independent engineering assessment of airworthiness has been performed, and the assessment indicates the aircraft system can be operated with an acceptable level of technical risk.

j. Flight Clearance Facilitator. Individual tasked to assist in development and progression of the draft flight clearance as the document advances through the engineering review of airworthiness.

k. Flight Clearance Officer (FCO). Military head AIR-4.0P of the National Airworthiness Team (NAT) at NAVAIR.

l. Flight Clearance Process. For the purposes of this instruction, it is the process by which an independent engineering analysis is performed to determine that an aircraft system and/or its component parts meets minimum design criteria, standards, and configuration for conduct of safe flight operations.

m. Flight Clearance Release Authorities (FCRA). Individuals empowered by the FCO to sign interim flight clearances at diverse levels of authority according to their experience and abilities. These empowered FCRA's exist at various NAVAIR sites as required for convenience and operational efficiency.

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n. National Airworthiness Team (NAT). Represents the cross competency group of empowered personnel, dedicated to the processing, tracking, and issuance of NAVAIR Flight Clearances. Heading this group is the military FCO and his/her civilian deputy. The empowered personnel at various NAVAIR sites, including FCRA's, in conjunction with the NAVAIR Airworthiness Office (AIR-4.0P) constitute the NAT.

o. Nonstandard Configuration/Operating Envelope. Any aircraft system configuration, including onboard avionics and software, or operating envelope not authorized by the NATOPS, legacy TACMAN/NATIP, operator's manual, maintenance manuals or an approved NAVAIR issued TD. This includes but is not limited to changes in external configuration, changes to hardware, firmware, and/or software, modification/change in personal flight equipment, modification to an external store, or modification to payload, and changes to Ground Control Station hardware or software for an unmanned aircraft system.

p. Operator. Personnel not located within the air vehicle with duties assigned to operate or assist in the aircraft system operation. Typically ground station controllers for remotely piloted vehicles or unmanned air vehicles.

q. Safety of Flight (SOF). The property of a particular air system configuration to safely attain, sustain and terminate flight within prescribed and accepted limits for injury/death to personnel and damage to equipment, property and/or environment. The intent of assessing SOF is to show that appropriate risk management has been completed and the level of risk (hazard to the system, personnel, property, equipment and environment) has been appropriately identified and accepted by the managing activity.

r. Software Levels. Changes to software and/or firmware are divided into levels according to type of change and what systems in the aircraft systems are affected.

Direct Critical Software (Level I): Software and/or firmware products that:

(1) Directly control the flight dynamics of the aircraft. Examples are flight control computer software and engine control software.

(2) Directly control a flight critical system provided there is not a backup system that is immediately available if the primary fails. Example is software

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within the Heads Up Display that controls how and where flight critical information is displayed when no backup attitude display is available.

(3) Provide flight critical data to a flight critical system provided there is not a backup system that is immediately available if the primary fails. Examples are attitude and airspeed data provided by the inertial navigation system and air data computer without secondary sources.

(4) Control the release timing of stores and/or the flight dynamics of stores within the stores separation region. Example is release timing software within the Stores Management Set.

Indirect Critical Software (Level II):

(1) Software and/or firmware which provide critical data to flight critical systems and in-flight management systems which control primary warning or caution systems, fire suppression, stores release systems, essential attitude, and navigation instruments that have independent backup systems immediately available.

(2) Software and/or firmware which provide non-critical data to flight critical systems and in-flight management systems which control aircrew or operator advisories, stores release systems, and navigation instruments. Examples of indirect critical software and/or firmware include:

(a) FA-18 Mission Computer, and Cockpit Display Software that is not flight critical (e.g. fuel displays or engine instruments that have an independent backup)

(b) Inertial Navigation Systems that have independent backup attitude systems immediately available

(c) Environmental control systems with independent warning or caution systems.

Non-Critical Software (Level III). Software and/or firmware which controls and/or provides data to perform non-flight critical functions. Examples are F-14B radar warning receiver and fire control radar.

s. Store. Any device carried internally or externally and mounted on suspension and release equipment (or air vehicle structure), whether or not the device is capable of being separated in flight from the aircraft system. Examples of aircraft system stores are as follows: a UAV/UAS (carried/launched from another air vehicle), missile, rocket,

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bomb, mine, torpedo, pyrotechnic device, sonobuoy, fuel tank, pod (gun, refueling, electronic-countermeasures, etc.), tow target reel or similar items.

t. Suspension Equipment. A device such as a rack, adapter, missile launcher or pylon used for store carriage, employment and/or jettison.

u. Type Commands (TYCOM). A Naval administrative organization that provides the tactical commands with the means to conduct tactical operations. Their responsibilities include: administration of training, supply, and repair of Fleet units.

v. Unmanned Aerial Vehicle (UAV)/Unmanned Aircraft System (UAS). A remotely piloted or autonomous air vehicle and its operating system designed for purposes other than as a weapon of destruction. The operating system can be built into the vehicle or be part of the ground support equipment for remotely piloted vehicles. This "system" includes the ground control station, data links, flight control system, communications systems/links, etc., as well as the air vehicle.

7. Responsibilities

a. Reference (a) assigns NAVAIR cognizance over all aircraft system equipment operating limitations and technical data per paragraph 2.2.2.c.3. "Because of their systems test and evaluation mission, COMNAVAIRSYSCOM has cognizance over all aircraft equipment limitations and technical data in NATOPS publications and is responsible for ensuring the airworthiness of all naval aircraft configurations". This cognizance is delegated to the appropriate departments under the purview of AIR-4.0. AIR-4.0 has the responsibility to promulgate operating limitations and technical data by issuing a flight clearance whenever an aircraft system configuration is modified or a new aircraft system is introduced.

b. The NAT is the single Point of Contact (POC) for the issuance of interim and permanent flight clearances for all naval aircraft systems. All proposed NATOPS and legacy TACMAN changes will be coordinated with the AIR-4.0P airworthiness office, who will act as the interface between the Model Managers, the class desks, and the cognizant engineering competencies to execute engineering review and the subsequent release of these changes. Reference (b) restructures the TACMAN program into the AIR Naval Tactics, Techniques, and Procedures (NTTP) and NATIP programs. During the transition phase, a

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platform will have either a legacy TACMAN or an AIR NTTP and NATIP set. Naval Strike and Air Warfare Center manages the AIR NTTP program. The NTTP contains relevant tactical techniques and procedures for a platform. The NATIP program is managed by AIR-4.0P. NATIP documents contain the technical data required for the aircrew to safely and effectively employ the aircraft and weapon systems. The NATIP is the foundation on which the tactics delineated in the NTTP are built.

c. The NAT is responsible for:

(1) empowerment of NAT personnel; including establishment of standards and selection criteria to empower members of NAVAIR, in part or in whole, to assess airworthiness and ensure proper and necessary engineering review is performed prior to final approval and issuance of flight clearances;

(2) approval and oversight of the processes used to issue flight clearances;

(3) maintaining the database, files and records of all flight clearances issued;

(4) providing guidance and support to the aircraft system IPT in planning and coordinating the development of an information management plan to identify the engineering data required to result in the timely issuance of a NAVAIR Flight Clearance;

(5) establishing necessary reviewing competencies for individual flight clearances;

(6) assisting the class desk in planning meeting and co-signing minutes; and

(7) assuring that all applicable processes have been followed prior to issuing a flight clearance.

d. Specific individuals of NAVAIR, identified by the AIR-4.0P FCO/Deputy, are empowered, in part or in full, to issue flight clearances. The level of empowerment and authorization to manage the flight clearance process is defined in the individual "Empowerment Letter" signed by the FCO/Deputy. The interim flight clearance process, as described in enclosure (1), shall be adhered to consistently throughout NAVAIR.

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e. The IPT/Class Desk or Externally Directed Team (EDT) leader or delegate is responsible for:

(1) implementing the flight clearance process described herein. IPT leaders shall allocate budget and define the schedule for airworthiness assessments. IPT/EDT leaders are responsible to manage the execution of the process and establish flight clearance priorities within the programs;

(2) establishing and maintain lines of communication across the customers and stakeholders during the execution of the flight clearance process and to establish cross competency consensus in the airworthiness assessment. Program Managers Air (PMAs), PEOs, ACCs, NAT, contractors, and the engineering team are all contributors to the success of this process; and

(3) developing, funding, and coordinating delivery of required technical data to the engineering review team in support of airworthiness assessment for the flight clearance.

f. NAVAIR engineering competency managers shall establish and document certification requirements for personnel to perform airworthiness assessments as performance monitors. The competency managers shall identify certified personnel from NAVAIR to support the IPT and staff the flight clearance engineering review team.

g. NAVAIR engineering review team shall establish the technical data requirements to determine the operating envelopes, limitations, cautions and special inspections required based upon a specified configuration in the flight clearance. Enclosure (2) contains examples of types of data typically required for each flight clearance application.

8. Process

a. Sound planning and communication are critical to the successful execution of the flight clearance process and cannot be overstressed. Enclosure (1) describes the interim flight clearance process and the actions leading to interim flight clearance approval for manned and unmanned aircraft systems. The IPT/EDT Leader is a key figure and has the responsibility to ensure the process is adhered to. The process requires the IPT/EDT to establish the engineering review team, execute the engineering review to establish airworthiness, and manage the interim flight clearance development. The process can be lengthy and coincides with the non-recurring engineering

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activities of most development programs. IPT/EDT program plans must account for cost and schedule associated with the process at the outset.

b. Designated member(s) of the IPT/EDT shall generate the interim flight clearance request as a naval message (if at a Department of Defense ((DoD)) activity) or a formal serialized letter sent to the NAT for tracking and action, with a copy to the PMA and the IPT leader. Samples of both are provided in enclosure (3). The IPT/EDT leader will determine when the analyses and test results indicate the system is mature enough to warrant an interim flight clearance request. Identified members of the IPT/EDT shall define aircraft configuration, the flight envelope and any special limitations for use in the interim flight clearance request message. The ACC must be contacted and must be in agreement with the use of their aircraft assets prior to the IPT/EDT issuing a flight clearance request message. Documentation of this concurrence must appear as a reference in the interim flight clearance request message. For RDT&E programs using NAVAIR ACC, (AIR-5.0D) aircraft, the interim flight clearance request shall be released by the appropriate Test Wing (i.e., Naval Test Wing Atlantic or Naval Test Wing Pacific) or AIR-5.0D, or their delegated authority. For programs using Fleet assets, the interim flight clearance request shall be released by the appropriate TYCOM/ACC/ aircraft owner or IPT (with owner's concurrence). In situations where both Fleet and AIR-5.0D assets will be used, the interim flight clearance request can be released by the appropriate TYCOM, IPT, or Test Wing with concurrence from the other parties. The preferred method in this case is to release the request from the appropriate Test Wing with TYCOM concurrence. Interim flight clearance requests must adhere to the format of enclosure (3), with the exception of requests sent to an FCRA that may be in a non-standard format at the discretion of the approving FCRA. Electronic Mail (e-mail) and phone call requests will not be recognized. When the process of enclosure (1) is followed, the flight clearance request and the data identified in the EDRAP should be sent at least 21 days prior to interim flight clearance need date. When blocks 1-12 of the enclosure are not followed, considerably more time may be required. References (a) and (b) provide additional guidance for submission of requests for NATOPS and NATIP changes.

c. Formal interim flight clearance requests are required for extension of time period for existing interim clearances, re-issuance of expired interim clearances, and changes/

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amendments to existing flight clearances. Readdressals of existing clearances do not require a formal request.

d. Flight clearances will be issued via naval message or other NAT approved methods, a sample interim flight clearance is provided in enclosure (3). If previously coordinated, the FCO/NAT may elect to issue flight clearances via telephone facsimile.

e. The NAT appointed representative and IPT/EDT will review the draft interim flight clearance and determine acceptability of an air vehicle, store, or operating envelope modification for flight and establish flight operating limitations, based upon coordination with NAVAIR competencies and/or activities having technical cognizance of the modification and the aircraft systems/technical disciplines.

f. AIR-4.0P authorizes operating procedures and limitations on behalf of CNO for new or modified aircraft systems to be introduced for Fleet operations via formally promulgated NATOPS and legacy TACMAN/NATIP. Interim operating procedures and limitations may be issued via interim flight clearance for aircraft systems that do not have this authorization.

g. The FCO may elect to issue a change to the permanent flight clearance documents (NATOPS, NATIP, or legacy TACMAN) in lieu of an interim flight clearance.

(1) As authorized in reference (a), AIR-4.0P will promulgate changes to aircraft equipment limitations and technical data after consultation with the model manager and without further approval provided that no change in operating procedures is involved. Approval from the appropriate NATOPS Advisory Group members is required for changes affecting operating procedures. Promulgation is achieved via interim change to NATOPS. Interim NATOPS changes, when appropriate, will be approved by AIR-4.0P per reference (a) and reference (i).


(2) Per reference (j), NAVAIR is responsible for the technical data and information contained in the legacy TACMANs and will promulgate changes to appropriate sections per reference (k), provided no change in operating procedures is involved. Accordingly, AIR-4.0P will promulgate changes to aircraft operating limitations, stores limitations, weapons fuzing, and minimum arming time criteria.

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(3) Per reference (b), NAVAIR is responsible for the technical information contained in the NATIP. If the aircraft system has been inducted into the NATIP process, the approved technical data will be immediately incorporated into the appropriate NATIP and promulgated to the Fleet via the NATIP website.

9. Enclosure (4) contains a list of acronyms used throughout this instruction and its enclosures.

10. Review. AIR-4.0P shall annually review this instruction and provide recommendations for changes and deletions to the Commander.



W. B. MASSENBURG

Distribution:

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NAVAIRHQ Directives Web sites:

<https://logistics.navair.navy.mil/library.cfm> or locally

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<http://airworthiness.navair.navy.mil>.

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**NARRATIVE
FOR
INTERIM FLIGHT CLEARANCE PROCESS**

0. Fleet Requirement Identified (Block 0)

AIR-4.0P authorizes operating procedures and limitations for new and/or modified aircraft systems introduced for Fleet operations on behalf of CNO via formally promulgated NATOPS and legacy TACMANs/NATIPs. CNO recognizes there are organic Fleet requirements identified, outside the NAVAIR developmental acquisition world, that necessitate operation of Fleet assets in a non-standard configuration or outside the envelopes documented by the NATOPS, TACMAN/NATIP, or a NAVAIR issued TD. Engineering assessment for Fleet operations following aircraft modification or desired envelope expansion will begin by communication between the ACC/ARC/aircraft owner or requirements generator and the IPT so the IPT leader can initiate the NAVAIR interim flight clearance process.

1. Program Initiated (Block 1)

This is the entry point and beginning of the NAVAIR interim flight clearance process. If there is a requirement for a new aircraft or modification to an existing aircraft for flight in a nonstandard configuration/operating envelope (as defined in paragraph 6.n), then proceed to Block 2. If the program does not originate from a platform IPT leader, then the platform IPT(s) must be notified concurrently to provide consensus prior to proceeding. The IPT/EDT leader should always coordinate with other platform/product IPT/EDT leaders as required. If concurrence is not granted by the platform IPT leader, the ACC/ARC/aircraft owner or requirements generator will be informed by the IPT/EDT leader and the flight clearance process will not be undertaken.

2. NAT Informed of Program (Block 2)

The IPT/EDT leader provides the NAT with enough information to determine if an interim flight clearance is required.

3. Is Flight Clearance Required? (Block 3)

The NAT, based on the IPT/EDT leadership briefing, determines if an interim flight clearance is required. If a flight clearance is not required, the NAT informs in writing the IPT/EDT leader

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to proceed without one. If a flight clearance is required, then proceed to Block 4.

4. Establishes Reviewers and Agenda (Block 4)

The NAT in concert with the class desk/IPT leads determine the initial technical expertise (which engineering competencies) required for review of the proposed interim flight clearance request and the proposed interim flight clearance.

5. Attendee List/Agenda (Block 5)

The NAT informs the IPT/EDT leadership in writing of the recommended engineering competencies that will need to review the interim flight clearance request and the interim flight clearance. The IPT/EDT leadership (with platform IPT/EDT leadership if required) negotiates with engineering competency leadership to determine the required reviewers and attendee list. The attendee list must include the required reviewers. The designated attendees submit recommended agenda items. The IPT/EDT leadership finalizes agenda, attendee list, and calls the planning meeting.

6. Facilitate a Flight Clearance Planning Meeting (Block 6)

AIR-4.0P and the IPT/EDT determine if a planning meeting is required and if an E/DRAP is necessary. The IPT/EDT leader chairs and is in charge of planning meeting.

7. Planning Meeting (Block 7)

The primary participants are the appropriate IPT/EDT members, the required reviewers identified in Block 5, and contractor personnel as required. The intent of this meeting is to establish the lines of communication and begin the process of developing a complete and detailed understanding of the engineering data required to determine the airworthiness of the system as well as an understanding of the program schedule. It is expected that this will be an iterative process requiring follow-on efforts as program planning matures. The IPT/EDT leader, with support from NAT personnel, shall reconvene the conference at the appropriate interval. The IPT/EDT leader shall maintain a record of the plans, schedules, actions and agreements established in the planning meeting to support the creation of the E/DRAP. Engineering data requirements should be tailored when appropriate, specifically in the case of a UAV/UAS designed to be "expendable" or where the UAV will conduct

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missions with "minimum life expectancy". Tailoring of the engineering design requirements should occur between the class desk and the performance monitors early in the acquisition/planning phase, and these requirements may assist in the formation of the CDR.

8. Flight Clearance Engineering Requirements (Block 8)

a. At the planning meeting (Block 7), the minimal engineering requirements along with a schedule for the effort and costs are established. Flight clearance engineering requirements are established using the guidance offered by appropriate specifications and standards and individual competency's processes and procedures. Additional descriptive data, analyses, ground tests, and flight tests may be identified depending on the maturity of the technology and the assessed airworthiness risk. Special consideration should be given to data requirements for UAV/UAS that plan to fly with an accepted probability of loss level, and appropriate unmanned aircraft system design criteria should be used. These requirements may be incorporated into a contractual statement of work or in-house work agreement if concurrence is reached (Block 9). For special purpose configurations not intended for Fleet introduction, the tailored application of airworthiness standards defined in reference (g) may be used. For commercial-derivative aircraft leased or owned by the Navy the standards for the technical engineering review are defined in reference (d). Some commercial-derivative aircraft will be operated in exactly the same operating envelope and manner of usage as exists in the commercial environment, while others will have Navy unique requirements.

b. For the engineering team, it is important that all aspects of the program are presented and understood. This includes schedule, cost, data required for analyses, appropriate review cycle(s), and final deliverables.

c. A summary of the analyses, ground testing, and flight testing to be performed along with the associated input and output data, confidence level of the anticipated results and the identification of the reviewers needs to be given to IPT/EDT leadership via informal correspondence.

9. Concurrence (Block 9)

IPT/EDT leadership reviews overall program requirements (including planning meeting discussions and results) and

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compares with generated engineering requirements established in Block 8. If, after review of overall program requirements, the IPT/EDT leader finds the information complete, they will provide their concurrence. If upon review of the overall program requirements, planning meeting results/discussions, and AIR-4.0 established engineering requirements it is still not clear that all necessary details or questions have been completed or answered, the IPT/EDT leader will reconvene a planning meeting with the necessary people to resolve any unanswered details/questions.

10. Engineering/Data Requirements Agreement Plan (E/DRAP) (Block 10)

a. The E/DRAP represents the negotiated written agreement established during the flight clearance planning meeting between the IPT/EDT leader and the competency engineering personnel. The written plan shall contain a detailed description of the engineering data that the competencies require to establish the system airworthiness with confidence. The plan is the responsibility of the IPT/EDT leadership. An E/DRAP is required for any project required to conduct a Flight Readiness Review in accordance with reference (1), and recommended for all others. Any perturbations in the program shall be coordinated with the competency engineering staff and any changes to the engineering program shall be reflected in a revision. The E/DRAP must be re-negotiated to reflect any changes to the engineering program. At a minimum the plan shall contain:

- (1) program description;
- (2) names of the IPT/EDT engineering members and a point of contact (POC) for each subject element (structures, Flying Qualities and Performance, etc.);
- (3) names of the cognizant engineering competency personnel as determined by IPT/EDT/competency management;
- (4) platform POC;
- (5) engineering program schedule;
- (6) proposed need dates for flight clearances;
- (7) proposed air vehicle configuration for flight clearances;

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(8) proposed operating limitations/envelopes for flight clearances;

(9) identification of flight clearance facilitator for flight clearance process management;

(10) identification of IPT personnel responsible for the draft flight clearance request;

(11) data element list required for each technical specialty;

(12) technical issues of concern/risk items and their potential schedule impacts;

(13) signature page with the IPT/EDT leadership, the NAT representative and the cognizant competency engineers; and

(14) date of issue (to include a revision numeral, if a revision occurred).

11. Analysis, Tests, and Evaluation (Block 11)

Block 11 entails gathering, analyzing, and evaluating the data and testing specified in the E/DRAP. The engineers identified in Block 4 must be involved in this process. Data evaluation or results from some of the testing may generate additional data requirements due to the unknowns that can inevitably materialize. This would require a revision to the E/DRAP. The IPT/EDT leader is responsible to report any deviations from the agreed plan to the engineering competency members and the NAT. Severe program deviations may require a reconvening of the planning conference to renegotiate the E/DRAP. Depending on the complexity of the system/modification/subject of the interim flight clearance request, this period may involve substantial interaction within government and contractor teams.

12. Requirements Met (Block 12)

Each NAVAIR reviewer will inform IPT/EDT leadership or NAT that requirements from block 8 have been met or have not been met. If met, then proceed to block 13. If not met, then additional engineering requirements or alternative limits/configurations must be identified and concurred with by IPT/EDT leadership (Blocks 8 and 9). All iterations of Block 11 do not have to be completed to proceed to Block 13.

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13. Flight Clearance Request (Block 13)

The IPT/EDT leader will determine when the analysis, tests, and evaluation of Block 11 are mature enough to warrant an interim flight clearance request. Members of the IPT/EDT identified in Block 10 shall define aircraft configuration, the flight envelope and any special limitations for use in the request message. An interim flight clearance request is generated (as described in this instruction) by the IPT/EDT test team, or aircraft owner in the case of UAV/UAS, and sent to the NAT for action. For RDT&E programs using NAVAIR ACC, (AIR-5.0D) aircraft, the interim flight clearance request shall be released by the appropriate test wing (i.e., Naval Test Wing Atlantic or Naval Test Wing Pacific), AIR 5.0D, or their delegated authority. For programs using Fleet assets, the flight clearance request shall be released by the appropriate TYCOM/ACC/aircraft owner or IPT (with owner's concurrence). In situations where both Fleet and AIR-5.0D assets will be used the interim flight clearance request can be released by the appropriate TYCOM, IPT, or Test Wing with concurrence from the other parties. The preferred method in this case is to release the request from the appropriate Test Wing with TYCOM concurrence. The request shall be in the standard seven-part format described in enclosure (3), with the exception of requests sent to an FCRA that may be in a non-standard format at the discretion of the approving FCRA. The interim flight clearance request shall be in the form of a naval message or serialized letter, oral requests will not be accepted. When the requirements of Blocks 1-12 are satisfied, the interim flight clearance request and all supporting technical data should be sent at least 21 days prior to the flight clearance need date. When interim flight clearance requests have been sent in without Blocks 1-12 complete, then considerably more time will be required.

14. Owner Concurrence (Block 14)

When the IPT/EDT drafts the interim flight clearance request in Block 13, the TYCOM/aircraft owner must be contacted and must be in agreement with the use of and proposed changes to their aircraft assets prior to an interim flight clearance request being forwarded to the NAT. Documentation of this concurrence must appear as a reference in the flight clearance request.

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SEP 28 2004**15. Request Assigned and Logged In (Block 15)**

NAT receives the interim flight clearance request document, reviews it for thoroughness, ensures that all requested supporting data has been attached, checks for any potential configuration problems, and logs it into the NAVAIR flight clearance database. A final route sheet is created by AIR-4.0P to specify which engineering competencies are required to review the draft clearance. The NAT assigns the request to an appropriate flight clearance facilitator for action if one has not already been assigned by the IPT during actions in Block 10.

16. Draft Clearance (Block 16)

The IPT/EDT leader or their designated flight clearance facilitator, as designated in Block 10, will compose a draft interim flight clearance document. This initial draft interim flight clearance will be the document that is routed to reviewers via the paperless flight clearance system for edit.

17. Engineering Review of Draft Clearance & Supporting Data (Block 17)

Engineering will review the draft clearance and supporting data and either concur or recommend modifications. Each competency-empowered reviewer will execute the processes delineated by the appropriate competency for flight clearance signature, tailored to the specific flight clearance. If the draft interim flight clearance arrives without Blocks 1 through 12 completed, then the work that should have been done in Blocks 8 through 12 will have to be done in Block 17 and the event will take significantly longer.

18. Requirements Met? (Block 18)

The IPT/EDT leader assures the proper engineering has been accomplished, and decides if the outcome of the engineering review meets the programmatic requirements. If it does, then proceed to Block 19. If it does not, the IPT/EDT Leader must decide if a modification to the draft clearance is acceptable (Block 20).

19. Quality Assurance and Risk Assessed (Block 19)

The NAT verifies that the proper engineering has been accomplished by ensuring that all of the required competencies established in Block 4 have reviewed and signed-off on the draft

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interim flight clearance. The NAT reviews the flight clearance for executability and cross-competency coherence. Also, the Plain Language Address Directory, format, and content will be reviewed by the NAT for completeness. Log books and databases will be checked to make sure that the document is ready for release. If the draft interim flight clearance has the maturity and fidelity required by the NAT, then the document is signed and the process continues to Block 23. If the NAT determines that additional engineering review is required, then the draft interim flight clearance will be routed through the necessary personnel. If modifications are made to the draft interim flight clearance, then it will be routed back to the IPT/EDT leader for concurrence (Block 20). At this point the NAT, IPT/EDT lead, and engineering competency representative may also assess the technical risk this flight clearance will incur onto the program. Safety of flight, risk to personnel or non-program property, and probability of aircraft loss (due to questions regarding the airworthiness of the system) may all be assessed and a clearance may be issued stating these unusual factors/considerations. If analysis indicates that the system is safe with respect to personnel and non-program property, but that based on the available data there are questions regarding the airworthiness of the system, then the clearance will be issued stating such. When this type of clearance is issued the decision to fly or not then becomes a programmatic and/or operational decision. In most cases, this type of clearance will be limited to RDT&E operations.

20. Modified Clearance Acceptable? (Block 20)

IPT/EDT leader determines whether modifications to the draft clearance are acceptable. If the answer is yes, then proceed to Block 21. However, if after review it is determined that a modified clearance is not acceptable to the IPT/EDT leadership, then they will proceed to the OPTION. At this point, a decision has been made that (1) the data available does not support the flight clearance request or (2) the necessary modifications of the draft interim flight clearance (modifications to limits, configuration, life cycle, etc.) do not meet customer/program requirements. The IPT/EDT leader must make the judgment and has the option to either proceed with resolution of the issues or to deny the flight clearance.

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21. Revised Clearance (Block 21)

If the IPT/EDT leadership determines that a modified clearance meets their program needs, then they will generate a revised draft clearance that is routed to the NAT (Block 19).

22. Flight Clearance Denied (Block 22)

At this point the IPT/EDT leader is faced with a program/project that cannot be executed and requires a complete rethink in terms of objectives, funding requirements, and schedule. The decision to deny a flight clearance is made. If a Fleet asset was to be used, then the ACC/ARC/aircraft owner needs to be informed by the IPT/EDT leader of program slip or cancellation. If the program can be restructured, then the IPT/EDT must repeat the process commencing with Block 1, program initiated, in the interim flight clearance process flow chart.

23. Interim Flight Clearance Issued (Block 23)

The clearance is issued following the appropriate guidance/ground rules and the IPT/EDT must now complete the other actions outside of this process for the flight(s) to take place. The flight clearance will be issued by the NAT via naval message or equivalent to the appropriate ACC/ARC/aircraft owner, a sample is provided in enclosure (3). An electronically signed copy may be faxed or emailed if urgent and this is considered to be a valid flight clearance document.

The FCO may elect to issue a change to the permanent flight clearance documents (NATOPS, NATIP, or legacy TACMAN) in lieu of an interim flight clearance. AIR-4.0P will promulgate changes to the NATOPS aircraft equipment limitations and technical data after consultation with the model manager and without further approval provided no change in operating procedures is involved. Promulgation of a change to the NATOPS, NATIP, or TACMAN is achieved via the processes defined in reference (a) and reference (b) respectively.

24. UAV Interim Flight Clearance Issued (Block 24)

In rare cases where probability of loss is determined to be above normal, as determined by engineering or the FCO, for the intended mission, an HRA may be required and an HRI may be included in the interim flight clearance. In this case, the interim flight clearance may state the probability of loss of the UAV. This could occur in a situation where a performance

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monitor is unwilling to sign a flight clearance with the given engineering data and the program manager is willing to accept the additional risk to their asset. In this situation, senior leadership shall be notified and briefed prior to execution.

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INFORMATION REQUIRED FOR DETERMINATION OF
FLIGHT OPERATING LIMITATIONS

1. Introduction. The following is a compilation of the data typically required for the determination of flight operating limits for nonstandard aircraft system configurations, including proposed store loadings, and expansions to the operating envelope. (This list does not include all possible data requirements for all flight clearance applications, nor are all data listed required for each application. The NAT, in cooperation with cognizant engineers, will determine the applicability and tailor the data requirements for each specific application.) MIL HANDBOOK 516, reference (m), provides a more detailed list of typical data requirements for U.S. Navy, U.S. Air Force and U.S. Army airworthiness approvals.

a. Descriptive (as applicable):

- (1) a complete description of proposed modification or operation including aircraft configuration, store loadings, flight envelope, and store carriage/employment/jettison envelope;
- (2) three-view drawings including all dimensions, materials, and physical/geometric/kinematics clearances;
- (3) air vehicle and stores weight and balance data, and appropriate mass moments of inertia;
- (4) air vehicle electrical wiring diagrams;
- (5) description of store arming/tail banding wiring configuration;
- (6) software version description documents and a listing of associated computer software configuration items;
- (7) assembly drawings of ALSS equipment;
- (8) drawings detailing installation of test instrumentation;
- (9) store release/launch event timelines, delays, and activation;
- (10) the largest center of gravity shift during a store drop/launch, fuel jettison/burn, or airborne refueling; and

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(11) the location of onboard instruments, e.g., angle-of-attack, mach, airspeed, etc.

b. Analysis (reports that details the following, as applicable):

(1) design criteria;

(2) air vehicle loads, store loads, and strength;

(3) vibrations, flutter, and divergence;

(4) vibration, thermal, and acoustic fatigue;

(5) electrical loads;

(6) effects on aircraft performance;

(7) effects on air vehicle stability and control, including flight control system failure or degraded mode effects;

(8) stores separation characteristics including miss distances;

(9) store autopilot or aircraft stability augmentation system function changes;

(10) aircraft or store control system mechanism dynamic effects;

(11) effects on air vehicle spin and stall recoveries;

(12) effects on air vehicle ALSS;

(13) software change hazard analysis;

(14) effects of normal operation and failures of test instrumentation on air vehicle systems, stores and stores employment, and ALSS operation including:

a. electromagnetic interference;

b. integrity of structures modified for instrumentation installation; and

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c. physical interference/clearance;

(15) system safety hazard analysis;

(16) Hazards of Electromagnetic Radiation to Ordnance (HERO) analysis including restrictions, safe separation distances, and HERO Emission Control bill (per NAVSEA OP 3565);

(17) powerplant effects;

(18) data links; and

(19) flight termination system vulnerability.

c. Testing (plans and reports that detail the following, as applicable):

(1) laboratory and ground testing;

(2) air vehicle/stores compatibility (fit check, electrical interface, arming wire/clip/tail band, etc.);

(3) static ejection and gun/rocket/missile firing;

(4) store separation and jettison (wind tunnel);

(5) ground vibration frequency (including ground resonance for rotary wing and rotorcraft) and modal survey;

(6) electromagnetic effects, including HERO (per NAVSEA OP 3565);

(7) stability and control, flying qualities, and performance (wind tunnel);

(8) thermal, vibration, and acoustic fatigue;

(9) environmental;

(10) structures static and fatigue;

(11) aircrew restrictive code effects (per NAVAIRINST 3710.9A, Anthropomorphic Accommodation in Naval Aircraft);

(12) man-mounted ALSS equipment compatibility/tolerance tests;

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- (13) escape system compatibility;
- (14) cockpit lighting/instrument lighting and readability;
- (15) aircrew or operator displays, including software change effects;
- (16) software bench and qualification testing;
- (17) test instrumentation compatibility;
- (18) powerplant effects; and
- (19) cockpit transparencies and transmissivity.

d. In-Flight Testing (plans and reports that detail the following, as applicable):

- (1) stores captive carriage;
- (2) store carriage loads;
- (3) stores separation and jettison;
- (4) weapon delivery data (ballistics, safe escape, etc);
- (5) carrier suitability (catapults and arrestments);
- (6) flutter and divergence;
- (7) acoustic and vibration environment;
- (8) loads and stress survey;
- (9) electromagnetic compatibility/electromagnetic interference;
- (10) flying qualities, and stability and control;
- (11) aircraft performance;
- (12) engine, transmission, auxiliary power unit, and cross shaft performance;
- (13) escape/egress system compatibility;

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- (14) aircrew or operator displays;
- (15) flight controls, including software change effects;
- (16) effects of forward firing ordnance on engine operation, including surge and restart envelope;
- (17) software, including effects on aircrew or operator displays; and
- (18) air vehicle subsystems performance.

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INTERIM FLIGHT CLEARANCE MESSAGE REQUEST FORMAT

FROM: (IPT, Aircraft Controlling/Reporting Custodian, or Test Wing as appropriate.)

TO: COMNAVAIRSYSCOM PATUXENT RIVER MD//4.0P//

INFO: COMNAVAIRLANT, COMNAVAIRPAC, COMNAVAIRESFOR, CNATRA, or COMNAVAIRSYSCOM (Aircraft Controlling Custodian)
COMNAVAIRSYSCOM PATUXENT RIVER MD (for Fleet request)//4.0X//

(security classification) //N13034//

SUBJ/ FLIGHT CLEARANCE REQUEST FOR (air vehicle or air vehicle/store system)

(References, as applicable, including TYCOM Concurrence email, phonecon, etc)

RMKS/1. REQUEST FLIGHT CLEARANCE FOR (scope and purpose, system identification, store nomenclature, aircraft BUNO and type/model/series, specific test program, as applicable)

2. AIRCRAFT CONFIGURATION: (takeoff configuration: what stores, which stations, as applicable, must identify the configuration change with drawings, draft ECP packages, part numbers, dates, etc. to ensure that desired configuration is cleared for flight)

3. REQUESTED LIMITS/FLIGHT ENVELOPE: (limits/flight envelope requested: airspeed, altitude, mach number, acceleration, dive angle, store carriage/release, nonstandard limits, as applicable)

4. DATA: (supporting data identification/location/availability: engineering/test/simulation data, existing documentation such as proposed RAMEC/ECP/etc., test plan/AIRTASK/reason for flight test; should reinforce E/DRAP)

5. NEED AND EXPIRATION DATES: (period requested: need date for clearance, and expiration date)

6. POC: (points of contact/names/phone numbers: requester, other coordinators, NAVAIR cog if known)

7. OTHER: (other remarks/comments: whatever else will help get the clearance approved such as additional supporting data/

Enclosure (3)

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information on the purpose and considerations for the flight, descriptions/comparisons with similar configurations, tests, limits, the basis for the expiration date or similar operations).

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INTERIM FLIGHT CLEARANCE REQUEST SERIALIZED LETTER FORMAT

13034

Serial Number

Date

MEMORANDUM

From: *Designator/Code*
Name, Title

To: AIR-4.0P

Subj: FLIGHT CLEARANCE REQUEST FOR MODIFICATION/CHANGE ON (specify aircraft T/M/S)

Ref: (a) COMNAVAIRPAC email, 20 Aug 01, Mr. John Doe (CNAP) to Maj Jones PMA-2xx

(b) Phonecon, 31 Aug 01, Ms. Jane Smith (CNAL) to Mr. Smith PMA-2xx

Note: For references include as needed: drawings, data, flight manuals, previous flight clearance messages, TYCOM concurrence email or phonecon (note name of TYCOM rep, and date), etc.

Note: The information should be provided per the seven-paragraph format. The content is the same as the Navy message style, however the format is more relaxed.

1. **Request:** Flight clearance for aircraft T/M/S with modification X installed (or for change in X limits). References x and y are concurrences from TYCOMs.

2. **Takeoff Configuration:** In accordance with (IAW) (list documents on which you are basing the aircraft configuration such as NATOPS, legacy TACMAN/NATIP, etc) with the addition of X (per reference)

3. **Limits:** IAW (list whatever document on which you are basing the current aircraft limits such as NATOPS, legacy TACMAN/NATIP, etc) and X (per reference).

4. **Data:** Include here the supporting data identification, location, and availability.

Examples: engineering/test/simulation data, existing documents such as proposed RAMEC, ECP, test plan, or AIRTASK. Should reinforce the E/DRAP.

5. **Period Requested:** Request this flight clearance be issued by DD MMM YYYY and remain in effect until DD MMM YYYY or until incorporation into NATOPS/legacy TACMAN/NATIP.

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6. **Points Of Contact:** Points of contact for this request are,
(as required)

Name	PMA-XXX	phone number	email address
Name	CNAL, N421D2	phone number	email address
Name	CNATRA, N4212	phone number	email address
Name	CNAP, N421E	phone number	email address
Name	CNARF, N3871	phone number	email address

7. **Special Notes, Cautions or Warnings** that should be included in Paragraph 4 of the final flight clearance. And comments such as "REQUEST TYCOMS READD THIS FLIGHT CLEARANCE TO APPROPRIATE ACTIVITIES FORAC" etc.

Signature, Name, Title

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SAMPLE INTERIM FLIGHT CLEARANCE MESSAGE FORMAT

PTTUZYUW RULSABU1234 XXXXXXXX-UUUU-RHMCSUJ.
 ZNR UUUUU
 P DATE-TIME-GROUP ZYB
 FM COMNAVAIRSYS COM PATUXENT RIVER MD//4.0P//
 TO COMNAVAIRLANT NORFOLK VA//N421G//
 COMNAVAIRPAC SAN DIEGO CA//N421G//
 INFO PEOTACAIR PATUXENT RIVER MD//PMAXXX//
 COMNAVAIRLANT NORFOLK VA//N421/N421D//
 COMNAVAIRSYS COM PATUXENT RIVER MD//5.0D/4.0P//
 BT
 UNCLAS //N13034//
 MSGID/GENADMIN/COMNAVAIRSYS COM/4.0P//
 SUBJ/INTERIM FLIGHT CLEARANCE FOR AIRCRAFT T/M/S WITH MODIFIED
 /XXXX INSTALLED//
 REF/A/MSG/COMNAVAIRSYS COM/DTG//
 REF/B/MSG/COMNAVAIRSYS COM/DTG//
 REF/C/DOC/NAVAIR/24OCT2000//
 REF/OTHERS AS APPLICABLE.
 NARR/REF A IS FLIGHT CLEARANCE REQUEST. REF B IS PREVIOUS FLIGHT
 CLEARANCE FOR MODIFICATION XXX. REF C IS NA13034.1B, NAVAIR FLIGHT
 CLEARANCE POLICY FOR MANNED AIR VEHICLES. REF OTHERS AS APPLICABLE.//
 RMKS/1. IRT REF A, FLIGHT CLEARANCE IS GRANTED FOR AIRCRAFT T/M/S WITH
 MODIFICATION XXX, SUBJECT TO NATOPS AND THE FOLLOWING LIMITS AND
 CONDITIONS.

2. TAKEOFF CONFIGURATION: IAW NATOPS, APPLICABLE REFERENCES, OTHER
 APPLICABLE NAVAIR FLIGHT CLEARANCES, AND THE FOLLOWING: MODIFICATION
 XXX
3. LIMITS: IAW REF B, NATOPS, APPLICABLE REFERENCES, OTHER APPLICABLE
 NAVAIR FLIGHT CLEARANCES, AND AS FOLLOWS: LIMITS XXX
4. SPECIAL NOTES, CAUTIONS AND WARNINGS: AS NEEDED
5. TIME PERIOD: THIS FLIGHT CLEARANCE EXPIRES DD MMM YYYY.
6. POINTS OF CONTACT:
 - A. NAVAIR: CLASS DESK, NAME, PHONE NUMBER, EMAIL
 - B. CNAP: NAME, PHONE NUMBER, EMAIL
 - C. CNAL: NAME, PHONE NUMBER, EMAIL
 - D. FLIGHT CLEARANCE: NAME, PHONE NUMBER, EMAIL
7. OTHER REMARKS:
 - A. REQUEST TYCOMS READD THIS FLIGHT CLEARANCE TO APPROPRIATE
 ACTIVITIES FORAC.
 - B. PER REF C, THIS FLIGHT CLEARANCE PROVIDES NAVAIR AIRWORTHINESS
 CERTIFICATION SUBSEQUENT TO A DESIGN ENGINEERING REVIEW. IT DOES NOT
 AUTHORIZE AIRCRAFT/SYSTEM MODIFICATION, NOR DOES IT SATISFY NAVAIR
 REQUIREMENTS FOR CONFIGURATION MANAGEMENT. REFER TO OPNAVINST 4790.2H
 FOR POLICY GUIDANCE ON CONFIGURATION MANAGEMENT AND MOD AUTHORITY.//

BT
 #1234
 NNNN
 RTD:000-000/COPIES:

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ACRONYMS

ACC - Aircraft Controlling Custodian
ALSS - Aviation Life Support Systems
ARC - Aircraft Reporting Custodian
ASN(RDA) - Assistant Secretary of the Navy for Research,
Development and Acquisition
CDA - commercial derivative aircraft
CDR - Contract Data Requirements
E/DRAP - Engineering Data Requirements Agreement Plan
EDT - Externally Directed Team
FAA - Federal Aviation Administration
FCO - Flight Clearance Officer
FCRA - Flight Clearance Release Authorities
FOT&E - Follow-on Operational Test and Evaluation
HERO - Hazards of Electromagnetic Radiation to Ordnance
HRA - Hazard Risk Analysis
HRI - Hazard Risk Index
IPT - integrated product team
NAT - National Airworthiness Team
NATIP - Naval Aviation Technical Information Product
NATOPS - Naval Air Training and Operating Procedures
Standardization
NAVAIR - Naval Air Systems Command
NTTP - Naval Tactics, Techniques, and Procedures
OEM - Original Equipment Manufacturer
PEO(A) - Program Executive Offices for Air Anti-Submarine
Warfare, Assault and Special Mission Programs
PEO(T) - Program Executive Offices for Tactical Aircraft
Programs
PEO(W) - Program Executive Offices for Strike Weapons and
Unmanned Aviation
PMA - Program Manager Air
RDT&E - research, development, test and evaluation
SOF - Safety of Flight
TACMAN - Tactics Manual
TD - Technical Directive
TYCOM - Type Commander
UAS - Unmanned Aircraft Systems
UAV - Unmanned Aerial Vehicles
USNTPS - United States Naval Test Pilot School