



DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
2000 NAVY PENTAGON
WASHINGTON, DC 20350-2000

OPNAVINST 13210.1B
N98
15 Apr 2014

OPNAV INSTRUCTION 13210.1B

From: Chief of Naval Operations

Subj: NAVAL AVIATION POLICY FOR AIRCRAFT AVIONICS SAFETY
SYSTEMS

Ref: (a) SecDef Memo of 22 June 2006, Reducing Preventable
Accidents
(b) Prioritization and Selection Process of Department of
the Navy Aviation and Operational Safety Concerns
(Naval Audit Service Report N2013-0001, 12 October
2012)
(c) Joint Concept of Operations for Unmanned Aircraft
Systems Manual, Third Edition, November 2011
(d) CJCSI 3170.01H
(e) COMNAVAIRPAC/COMNAVAIRLANTINST 3025.1D

Encl: (1) Safety System Compliance Matrix Criteria
(2) Sample Waiver Request

1. Purpose

a. To update policy on the incorporation and installation of required aircraft avionics safety systems in Navy and Marine Corps aircraft.

b. Major changes include the addition of group 4 and 5 unmanned aircraft systems (UAS), the alignment of this policy with the requirements development processes, and expanded fidelity of compliance status. This instruction is a complete revision and should be reviewed in its entirety.

2. Cancellation. OPNAVINST 13210.1A.

3. Background. In December 1996, the Commander, Naval Air Forces (COMNAVAIRFOR) chaired the Air Board and sponsored the Human Factors Quality Management Board to conduct an analysis of aircraft avionics safety systems. The study addressed flight incident recorders, flight data recorders, global positioning

system, navigation equipment, ground proximity warning systems, collision avoidance systems, and integrated material diagnostic systems. The Air Board concurred with the Human Factors Quality Management Board findings that incorporation of these systems was necessary to achieve naval aviation mishap reduction goals established by the Secretary of Defense (SecDef). The urgency was further emphasized in reference (a) by the SecDef's direction that "We will fund as a first priority those technologies and devices that save lives and equipment. We will retrofit existing systems, and consider these devices as a 'must fund' priority for all new systems." The prioritization, selection, and resourcing processes are now emphasized directly from the findings and recommendations contained in reference (b).

4. Discussion. Protecting the lives of aircrew and passengers as well as preserving the Navy's valuable assets is a matter of combat readiness. This instruction serves to align the implementation of aircraft avionics safety systems via the requirements, resourcing, and acquisition processes. Further, this instruction directs the tracking of safety system implementation across the fleet of naval aircraft via a safety system compliance matrix.

5. Capability Definitions and Focus Areas

a. Controlled Flight Into Terrain Avoidance. A controlled flight into terrain avoidance capability enhances situational awareness (SA) by providing cues and warnings to prevent an airworthy aircraft, under the control of a pilot, from being flown into terrain (i.e., land, water, or obstacles). Controlled flight into terrain avoidance systems mitigate loss of SA by combining sensor information with aircraft position, velocity vectors, and local terrain topography (when available) to predict future flight-path conflicts. These systems then give appropriate direction to the aircrew on how to best avoid the impending impact. Controlled flight into terrain results from a loss of aircrew SA generally caused by factors such as degraded visual environment, spatial disorientation, task overload, or fatigue. Degraded visual environment is defined as the presence of obscurants (e.g., fog, dust, blowing sand, heavy rain, etc.) and or low light conditions that reduce aircrew

visibility to the point where SA is lost and aircraft control cannot be maintained as it is in visual meteorological conditions.

b. Midair Collision Avoidance Capability. A midair collision avoidance capability provides cues and warning to aircrew of conflicting air traffic. This capability mitigates collision between aircraft or unmanned aerial vehicles when intent for flight exists to include inadvertent contact during formation takeoffs, rendezvous, air combat maneuvering, and air-refueling operations. Available data from the Naval Safety Center indicates a majority of midair collisions occur with other military aircraft and often between members of the same mission. The potential for a midair collision is increased by miscommunication, error in navigation, degraded visual environment conditions, congested airspace, and deviations from briefed flight profiles.

c. Crash Survivable Recorder. A crash survivable recorder records and protects aircraft in-flight information to aid the determination of mishap causal factors. A crash survivable recorder combines the functions of both a flight data recorder and flight instrument recorder, including aircraft performance, aircraft system status, and cockpit voice and or video recording, into a single digital data retention system, which is designed to survive or avoid the destructive forces of an aircraft crash. A properly designed crash survivable recorder system should provide data for multiple functions beyond mishap analysis to include source data for a knowledge management tool.

d. Military Flight Operations Quality Assurance. Military flight operations quality assurance is a knowledge management process consisting of post flight, off-aircraft analysis of routinely downloaded flight data. It provides aircrew, maintenance personnel, and leadership the capability to review flight operations with a quantitative analysis of aircrew and aircraft system performance, and identifies trends measuring the safe and efficient use of the aircraft.

6. UAS. Due to system maturity, complexity, and proliferation, group 4 and 5 UAS platforms, as defined in reference (c), are now subject to this instruction and status shall be tracked per the safety system compliance matrix.

7. Requirements Documents and Process

a. The focus areas set forth in paragraph 5 shall be incorporated in requirements capabilities documents developed under the provisions of reference (d). Compliance shall be verified and documented in milestone reviews.

b. The prioritization of aircraft avionics safety systems is guided by reference (e), which documents the purpose, organization, and procedures of the Navy Aviation Requirements Group. Prioritized issues represent the funding requests for development and feed the program objective memorandum (POM) process each year.

8. Safety Systems Compliance Matrix. The safety system compliance matrix is intended to be a quick reference planning tool which provides a graphic depiction of safety system compliance status by type, model, and or series (T/M/S). The safety system compliance matrix uses a color coded methodology with amplifying remarks listed by T/M/S to further depict program status. Enclosure (1) provides amplifying instructions and criteria regarding the construct of the safety system compliance matrix.

a. The safety system compliance matrix shall be published in November to support the Avionics Enabling Naval Aviation Requirements Group and in May to document the sponsor's program proposal decisions.

b. The safety system compliance matrix shall be distributed, at a minimum, to the requirements and safety officers of Commander, Navy Air Force Reserve (COMNAVAIRES), and Chief of Naval Air Training (CNATRA) as a means to inform the Naval Aviation Requirements Group process. In addition, the safety system compliance matrix shall be distributed to Commander, Naval Air Systems Command (COMNAVAIRSYSCOM); Deputy Assistant Secretary of the Navy Safety; Headquarters, Marine Corps (HQMC) Aviation Department; and the Naval Safety Center.

9. Waivers. Requests for exception to this policy shall be submitted for waiver approval. Waivers should be pursued principally due to service life of platforms, or unique operational assessments, that demonstrate acceptable risk of not incorporating these aircraft avionics safety systems.

a. Requests for waiver shall be initiated by platform Program Manager Air (PMA), forwarded to the Office of the Chief of Naval Operations (OPNAV), Director, Air Warfare (OPNAV N98) for endorsement, and approved or disapproved using the sample provided in enclosure (2).

b. The waiver list shall be reviewed on an annual basis for validity. During this review, aircraft T/M/S will be added and removed as required. If not waived, Naval Aviation Requirements Group issue sheets shall be developed until the capability can be fiscally resolved for the platform.

c. Requests will be directed to OPNAV N98 T/M/S requirements officer who will coordinate with the avionics safety systems requirements officer, OPNAV Logistics and Readiness (OPNAV N980L), for OPNAV N98 endorsement. Issuance of an approved waiver provides relief only from the specific capability and is an acknowledgement of the inherent risk of not equipping an aircraft with the applicable safety system.

d. The waiver list shall be published to inform the safety system compliance matrix prior to the commencement of the Naval Aviation Requirements Group and Avionics Enabled Naval Aviation Requirements Group process.

10. Roles and Responsibilities

a. OPNAV N98 shall:

(1) Develop requirements in response to fleet needs. When a need has been properly validated via the Joint Capabilities Integration and Development System process and it has been determined a material solution is required, OPNAV N98 shall seek funding through the POM process based on prioritization and risk analysis.

(2) Monitor and maintain the compliance status of aircraft avionics safety systems on a platform by platform basis.

(3) Coordinate and align efforts to ensure proper levels of control and oversight per this instruction.

b. COMNAVAIRFOR shall refer to the safety system compliance matrix to inform applicable Naval Aviation Requirements Groups and Avionics Enabled Naval Aviation Requirements Groups of prioritization of aircraft avionics safety systems on the type commanders priority panel list.

c. COMNAVAIRSYSCOM

(1) The COMNAVAIRSYSCOM Air Combat Electronics Program Manager (NAVAIR PMA209) shall manage the avionics safety systems programs established by OPNAV N98 based on validated requirements, and produce acquisition strategies to field those systems based on allocated funding.

(2) NAVAIR PMA209 shall maintain technical standards for all avionics safety systems capabilities under their cognizance. In addition, provide OPNAV N98 technical support in the determination of T/M/S system compliance, via the safety system compliance matrix, and maintain subject matter expertise concerning current industry safety system technology.

(3) NAVAIR PMA209 shall provide risk analysis to assist OPNAV N98, COMNAVAIRFOR, HQMC, COMNAVAIRES, and CNATRA in the prioritization of requirements for aircraft avionics safety systems, from a hazard approach to mishap reduction, based on empirical data from the Naval Safety Center.

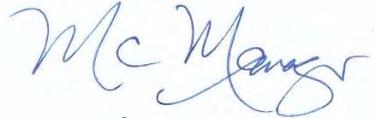
(4) Platform program managers shall support development of the safety system compliance matrix and provide appropriate documentation to assist in compliance determination for the avionics safety systems outlined by this instruction.

d. Commander, Naval Safety Center (COMNAVSAFECEN). Provide empirical input to support the risk analysis necessary for a hazard approach to mishap reduction in order to identify which T/M/S are at greatest risk for a given type mishap.

11. Records Management. Records created as a result of this instruction, regardless of media and format, shall be managed per the Secretary of the Navy Manual 5210.1 of January 2012.

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12. Reports Control. Reporting requirements contained within this instruction are exempt from reports control per Secretary of the Navy Manual 5214.1 of December 2005.

A handwritten signature in blue ink, appearing to read "Mc Manazir".

M. C. MANAZIR
Director, Air Warfare

Distribution:

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<http://doni.documentservices.dla.mil/>

SAFETY SYSTEM COMPLIANCE MATRIX CRITERIA

1. Color Attributes

a. Green. System has been integrated and solution is fielded; the completion percentage will also be indicated.

b. Yellow. Funding is in place, development, integration, and or testing has started; fleet fielding plan is in place, but installations have not begun. The anticipated date of first installation will be provided by the platform PMA and annotated in the corresponding matrix field.

c. Red. No system capability currently on platform, with no funding identified to develop a viable solution, and no plan to install the capability has been provided. A targeted compliance fiscal year shall be provided by the platform PMA and annotated in the corresponding matrix field.

d. Blue. Funding is in place, but the solution has not yet started development. A targeted development start date shall be provided by the platform PMA and annotated in the corresponding matrix field.

e. Grey. Indicates the capability has been waived.

2. Compliance Criteria

a. Controlled Flight Into Terrain. To be considered compliant for controlled flight into terrain avoidance, the system shall be required to meet the following criteria:

(1) Recognize an impending collision with terrain.

(2) Provide a warning early enough to allow the pilot to safely avoid impact.

(3) Operate over water and level terrain.

(4) Operate under all weather and illumination conditions.

(5) Provide loss of SA protection throughout the entire flight regime during all normal aircraft maneuvers, to include take-off and landing.

b. Midair Collision Avoidance Capability. To be considered compliant for midair collision avoidance capability, the system shall be required to meet the following criteria:

(1) Recognize an impending collision with other aircraft and provide advisories and warnings early enough to allow the pilot to safely avoid impact.

(2) Provide protection under all weather and illumination conditions.

(3) Provide protection in non-tactical situations throughout the entire normal flight regime, to include take-off and landing.

(4) Provide protection during the unique needs of tactical aviation (e.g., formation flight, aerial refueling, aerial combat, etc.) when solutions become available.

c. Crash Survivable Recorder. To be considered compliant for crash survivable recorder, the system shall be required to record, protect, download, decode, and periodically validate aircraft parametric and audio data as detailed in COMNAVSAFECEN ltr 3750 Ser 13/0414 of 15 March 2001.

d. Military Flight Operations Quality Assurance. To be considered compliant for military flight operations quality assurance, the system shall be required to meet the following criteria:

(1) Utilize routinely downloaded aircraft data to achieve analysis capability.

(2) Access an aircrew information system to acquire data about the aircrew as part of each flight record.

(3) Provide post mission aircrew debrief capability with animated flight replay and selectable tabular and graphical formats.

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(4) Provide aircraft maintenance and troubleshooting capability, using statistical analysis, and tabular and graphical presentations of aggregate data.

SAMPLE WAIVER REQUEST

13200
Ser
Date

From: Program Executive Officer, XXX Programs (PMAXXX)
To: Director, Air Warfare (OPNAV N98)

Subj: AVIONICS SAFETY CAPABILITY WAIVER REQUEST FOR XX
AIRCRAFT

Ref: (a) OPNAVINST 13210.1B

1. Per reference (a), the following information is provided:

a. Type, Model, and or Series (T/M/S):

b. Capability Requiring Waiver: Controlled flight into terrain, crash survivable recorder, collision avoidance system, and or military flight operations quality assurance. List the specific criteria for each capability for which the waiver is being requested.

c. Justification for the Request: Is the capability not technically mature to integrate into this T/M/S? Are alternate options being considered?

d. Assessment of the Risk: Describe the risk level. Use Naval Safety Center data to validate the risk level, with potential impacts to other aircraft systems and mission impacts highlighted.

e. Actions Taken and Plan to Achieve Safety Compliance: What has been accomplished to date? What is the platform's 'get-well' plan? Does the plan address technology, integration, and funding issues?

f. Date by which waiver is needed: Why?

2. Document the point of contact for the platform PMA requesting the waiver here. The PMA209 counterpart with which this waiver has been coordinated should also be documented. List name, code, phone, and e-mail address for each.