UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
OFFICE OF MARINE AND AVIATION OPERATIONS
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MEMORANDUM FOR: Distribution

FROM: Rear Admiral Michael J. Silah, NOAA
Director, NOAA Corps and
Office of Marine and Aviation Operations

SUBJECT: 2018 NOAA Aircraft Operations Center Medical Manual

The National Oceanic and Atmospheric Administration (NOAA) Aircraft Operations Center (AOC) Medical Manual has been updated in accordance with:

a. 5 CFR 339.202 Authority to Establish Medical Standards
b. 5 CFR 339.203 Authority to Establish Physical Requirements
c. 5 CFR 339.204 Waiver of Standards and Requirements.
d. 5 CFR 339.205 Medical Evaluation Programs
e. 5 CFR 339.206 Disqualification on the Basis of Medical History
f. OMAO Aviation Safety Standards 209-124, 02 September 2011
g. OMAO Policy 1004, OMOA Individualized Assessments, 31 March 2014
h. CPC SOP 0100-02, NOAA Corps Determination Process for Aviation and Dive Activities, 14 April 2016
i. AOC Policy 220-1-3, AOC Aeromedical, 16 February 2016
j. USCG Medical Manual, COMDTINST M6000.F, August 2014
k. USCG Aviation Medical Manual, COMDTINST M6410.3A, 4 April 2012
l. US Army Aeromedical Policy Letters (APL)
m. USAF Aerospace Medicine Approved Medications, 15 March 2016
n. FAA Guide for Aviation Medical Examiners

The NOAA AOC Medical Manual provides current guidelines for and interpretation of physical qualifications for aviation duty. It applies to all NOAA employees who fly aboard NOAA aircraft and complies with recommendations from the Occupational Safety and Health Administration.

An electronic version of the NOAA AOC Medical Manual is available in the OMAO Document Management System http://nor-is-waypoint.corpsrv.noaa.local/WebDesktop

NOAA Aviation Medical Manual

Guidelines and Procedures to Determine Fitness for Flight Duties

05 SEPTEMBER 2018

APPROVAL AND AUTHORIZATION:

RADM Michael J. Silah, NOAA
Director, NOAA Corps and
Office of Marine & Aviation Operations

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Guidelines and Procedures to Determine Fitness for Flight Duties

Section A: Purpose

1. The purpose of National Oceanic and Atmospheric Administration (NOAA) Aviation Medical Standards is to provide uniform criteria and interpretation of physical qualification for aviation duty based on standards from current occupational medicine practice within a variety of government and civilian organizations, as well as experts in aviation medicine.
2. NOAA Aviation Medical standards will ensure that currently designated NOAA aviators and individuals under consideration for certification as NOAA aviators are:
    a. Free of contagious diseases and other medical conditions that may potentially endanger the health or safety of other personnel.
    b. Free of medical conditions or physical defects that would require excessive lost duty time for necessary treatment/hospitalization or that would likely result in termination from the NOAA Aviation Program for being medically unfit.
    c. Capable of satisfactorily completing required training.
    d. Physically, mentally, and emotionally adaptable to the aviation environment without the need for geographic limitations or any other limitations incompatible with the mission.
    e. Capable of performing duties without aggravation of existing medical conditions or physical defects. It is the aviator's responsibility to notify the AMO/Health Services of any change in medical condition. Withholding medical information not only compromises the health and safety of the individual but potentially that of the entire mission crew. See Section I: Reporting Changes in Medical Condition.

Section B: Scope

1. Medical standards contained in this document are subject to change at any time by the OMAO Director, Office of Health Services (DOHS) with consultation to the Commanding Officer, AOC. Standards may be updated as necessary to incorporate changes in new medicine practice and/or research. This manual shall be reviewed biennially or as required.
2. This manual is a compilation of the treatment and administrative requirements that are unique to aviation personnel.
3. These standards apply to all NOAA Officers, aircrew, and personnel who fly onboard NOAA aircraft as part of their NOAA employment.

Section C: Components

1. Director, Office of Marine and Aviation Operations (OMAO) is the final authority for any appeals.
2. Commanding Officer (CO), Aircraft Operations Center (AOC) is responsible for conducting aviation operations involving NOAA aircraft.
3. Director, Office of Health Services (DOHS):
    a. Is the final authority for fitness for flight duty.
    b. Provides oversight for the examination, evaluation, and disposition of individuals seeking to fly aboard NOAA aircraft.
    c. Provides consultation to Health Service officers and other designated health care personnel.
    d. Serves as advisor to Director, OMAO regarding medical issues.

4. Aviation Medical Officer (AMO): A physician (M.D. or D.O), Physician Assistant, or Nurse Practitioner graduate of the U.S. Army Flight Surgeon Primary Course, U.S. Air Force Aerospace Medicine Program, U.S. Navy Flight Surgeon Course, or other appropriate course of instruction in Aviation Medicine. An officer is designated as an AMO by the DHS and is endorsed by the Commanding Officer, AOC. AMO responsibilities include:
    a. Primary assessment and determination of fitness for flight duty.
    b. Advisor to the Commanding Officer, AOC regarding medical issues.
    c. Reviewing authority for aviation physicals.
    d. Consultant to the Commanding Officer, AOC on aeromedical issues to include participation as medical representative on mishap investigation boards.

Section D: Authority

1. 5 CFR 339.202 Authority to Establish Medical Standards
2. 5 CFR 339.203 Authority to Establish Physical Requirements
3. 5 CFR 339.204 Waiver of Standards and Requirements.
4. 5 CFR 339.205 Medical Evaluation Programs
5. 5 CFR 339.206 Disqualification on the Basis of Medical History
6. OMAO Aviation Safety Standards 209-124, 02 September 2011
7. OMAO Policy 1004, OMOA Individualized Assessments, 31 March 2014
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14. FAA Guide for Aviation Medical Examiners

Section E: Aviation Physical Examinations

1. General Information:
    a. All aviation medical examinations must be conducted by a flight medicine trained examiner who may be a licensed physician (MD or DO), Physician Assistant, or Nurse Practitioner.
    b. Submitted forms must be signed and dated by the examiner at the time of the physical.
    c. Once designated in an aviation category, personnel are expected to maintain the requisite age-appropriate aviation medical screening schedule regardless of current aviation duty status as a qualification for Aviation Incentive Pay (AVIP).
    d. For the purpose of NOAA medical screening, aviation personnel have been divided into three categories:
        1) Flight Crew - Pilots, navigators, and flight engineers assigned to duties in physical control of an AOC owned/chartered aircraft during flight;
        2) Aircrew - An AOC employee acting in an official capacity, not involved in actual physical control of the aircraft, and is performing mission essential duties/functions on board an AOC owned/chartered aircraft during flight, such as flight directors, crew chiefs, and electronics technicians;

3) Observer / Mission Crew - NOAA and non-NOAA employees who are required as part of their duties to fly aboard AOC owned/chartered aircraft for the purpose of conducting scientific or reconnaissance missions. These individuals will typically have no mission essential safety responsibilities and will have no duties involving control of the aircraft.

2. Timing and frequency of medical screenings.

a. Examination types:

1) NOAA Commissioned Corps Aviation Physical Examination (NCCAPE) - for NOAA Commissioned aviation personnel and authorized NOAA Commissioned Officer aviation applicants. This exam may also be used in lieu of the FAA Class 1 or 2 for civilian aviators requiring an Up-chit for NOAA aviation.

2) Annual Health Assessment (AHA) - for all NOAA Corps officers approved for aviation duties and currently qualified to receive ACIP. NCCAPE meets AHA requirements for one year after completion.

3) NOAA Aircrew Medical Examination (NAME) - required for all civilian AOC employees having duties aboard NOAA aircraft engaged in frequent aerial flights but not having actual control of the aircraft. The FAA Class 3 Medical Certificate is a valid substitute for this examination. However, for all purposes within NOAA, the FAA Class 3 Medical Certificates will be given expiration dates that align with the periodicity of the NOAA Aircrew Medical Examinations.

4) FAA Medical Certificates may be used as a substitute for NOAA Aircrew Medical Examinations. The following FAA exams may be utilized by AOC (see Appendix J: *FAA Medical Certifications - Period of Validity*):

a) FAA Class 1 - Airline Transport Pilot.

b) FAA Class 2 - Commercial Pilot. Required for non-pilot flight crew (e.g., P-3 flight engineers).

c) FAA Class 3 - Technically for privileges of a private pilot, recreational, or student pilot. For NOAA AOC purposes a valid Class 3 FAA Medical Certificate without limitations will be deemed equivalent to a NOAA Aircrew Medical Examination. If limitations are noted, the conditions of the limitations must meet standards listed within this manual and are subject to review and approval by the NOAA AMO.

b. Examination frequency:

1) The NOAA Commissioned Corps Aviation Physical Examination will be performed every 5 years for aviators under 50 years old. At age 50 the exam becomes annual, consistent with USCG standards.

a) Timing of the exam will be within the 90 days preceding the last day of the member's birth month. Regardless of when the physical is performed, the period of validity is through the end of the birth month of the expiration year. Expiration of all flight physicals shall be birth-month aligned. **The following table shall be utilized to determine months of flight physical validity:**

Month in which last quinquennial exam was given

Birth Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
JAN	60	59	58	57	56	55	66	65	64	63	62	61
FEB	61	60	59	58	57	56	55	66	65	64	63	62
MAR	62	61	60	59	58	57	56	55	66	65	64	63
APR	63	62	61	60	59	58	57	56	55	66	65	64
MAY	64	63	62	61	60	59	58	57	56	55	66	65
JUN	65	64	63	62	61	60	59	58	57	56	55	66
JUL	66	65	64	63	62	61	60	59	58	57	56	55
AUG	55	66	65	64	63	62	61	60	59	58	57	56
SEP	56	55	66	65	64	63	62	61	60	59	58	57
OCT	57	56	55	66	65	64	63	62	61	60	59	58
NOV	58	57	56	55	66	65	64	63	62	61	60	59
DEC	59	58	57	56	55	66	65	64	63	62	61	60

b) The requirement to perform an exam will not be suspended in the event of training exercises or deployment. Flight Crew personnel with a scheduled deployment during their 90-day window may accomplish their quinquennial exam an additional 90 days prior and continue with the same valid end date. This may result in a member having a flight physical valid for up to 66 months.

2) An Annual Health Assessment (AHA) is required for all NOAA Corps Officers. Similar to the NOAA Commissioned Corps Aviation Physical Examination, the AHA is birth-month aligned and must be completed by the end of the member's birth month. It may be completed up to 90 days before expiration giving it a maximum validity of up to 15 months.

3) NOAA Aircrew Medical Examinations will be performed on a quinquennial schedule for aviators under 40 years old. At age 40 the exam becomes biennial, consistent with FAA standards.

Age	Physical Exam Validity
< 40	5 years
> 40	2 years

4) FAA Medical Certificates (FAA Form 8500-9) are valid for varying lengths of time dependent on the aviator's age, duties performed, and the class of certificate required. Currency of the FAA Medical Certificate will be in accordance with FAA regulations or the standards of NOAA Aircrew Medical Examinations, whichever is most restrictive. See Appendix J: *FAA Medical Certifications - Period of Validity.*

3. Physical examination requirements:

NOTE: Requirements and intervals for FAA Medical Exams are governed by FAA regulations. All certificates approved with limitations/Statement of Demonstrated Ability (SODA) are subject to review and approval by the AMO in accordance with established OMAO policy.

a. Flight Crew medical screening requirements are based on duties performed:

1) Quinquennial/annual NOAA Commissioned Corps Aviation Physical Examination – required for all NOAA Commissioned Corps aviators.

2) Quinquennial/annual NOAA Commissioned Corps Aviation Physical Examination or FAA Medical Certificate, Class 2 – required for civilian navigators and flight engineers. Annual Health Assessments are required if the civilian aviator utilizes the NOAA Corps Aviation Physical Exam process.

b. Commissioned Officers are required to be fit for world-wide assignment. Officers performing the duties of flight crew (and are receiving AVIP) require the following:

1) Quinquennial/annual NOAA Commissioned Corps Aviation Physical Examination with all applicable items delineated in Appendix A of this manual.

2) NOAA Commissioned Corps Aviation Physical Examination for Aviation Candidates shall include all applicable items delineated in Appendix B of this manual.

3) Annual Health Assessment requirements are delineated in Appendix A of this manual.

c. Aircrew - Individuals performing the duties of aircrew require the NOAA Aircrew Medical Examination or may substitute an FAA Medical Certificate, Class 3.

1) AOC Aircrew personnel who maintain a FAA Medical Certificate, Class 3 without limitations, and not beyond the NOAA determined expiration date, will be deemed to meet NOAA standards. All certificates approved with limitations/Statement of Demonstrated Ability (SODA) are subject to review and approval by the AMO in accordance with established OMAO policy.

2) Aircrew personnel are Technical Observers. The term "Technical Observer" is applied to personnel who do not possess an aviation designation but who are assigned to duty involving flight. The standards and associated examination shall relate primarily to equilibrium and the patency of Eustachian tubes. These personnel are not required to undergo a full aviation physical examination.

They are required to meet the standards prescribed for general duty to include the ability to perform emergency procedures and egress. Aircrew/Technical Observers who are required to undergo egress training must have a current (general purpose) physical examination on file and a Form CG-6020 (Up-chit) indicating "Cleared FFD/Dunker/Chamber."

3) The NOAA Aircrew Medical Examination shall include applicable items delineated in Appendix A of this manual.

Section F: Procedures for Medical Clearance

1. Medical Clearance Authority:

   a. Medical Clearance Authority for aviation resides with NOAA, not with external medical practitioners. In accordance with established OMAO policy, objective data and opinions from physicians and other medical practitioners will be reviewed as input for decisions to approve or disapprove NOAA aviation privileges. The ultimate decision authority to approve aviation personnel is the Director, Office of Health Services (DOHS).

   b. The DOHS may delegate the medical review and approval process to an AMO or other qualified medical personnel.

2. Aviation Personnel Responsibilities:

   a. It is the individual aviator's responsibility to make all necessary screening and diagnostic appointments and for ensuring all required medical paperwork is completed within the prescribed time limits. Aviation personnel are expected to be familiar with the requirements and regulations necessary to maintain medical clearance.

   b. Aviation personnel will forward complete medical screening, diagnostics, and other related medical documentation to the AMO for review and flight status determination. All documentation shall be submitted prior to expiration of current medical certificate.

   c. Once the medical screening is completed and approved by the AMO, aviation personnel are responsible for electronic transmission of their medical documentation to the NOAA Commissioned Personnel Branch (CPC) for inclusion in their official Health Record.

   d. Upon receipt of a new CG-6020 (Up-chit) and/or FAA Medical Certification, aviation personnel are responsible for ensuring a copy is provided to the AOC Operations Branch, entered into their local AOC training record and that the database maintained by the AOC Operations Branch is updated.

3. AMO Responsibilities:

   a. Upon receipt of medical documentation the AMO shall review all results for completeness and determine the need for repeat or additional testing.

   b. When deciding to change an aviator's flight status (grounding or Up-chit) the AMO will ensure appropriate documentation supports the recommended action.

   c. In compliance with Federal HIPAA and Privacy Act laws, all medical documentation submitted will be treated as confidential and safeguarded accordingly.

Section G: Reviewing Medical Clearances

1. Medical Screenings – NOAA AMO Responsibilities:

   a. After all screening results have been received, evaluated, and recorded, a determination will be made as to whether a member has any disqualifying defects or limitations.

   b. The AMO shall conduct a review of each physical in accordance with medical standards contained in this document. The AMO may then approve or disapprove an aviation screening.

   c. In unclear cases, the AMO will contact the DHS or designee for guidance in determining an individual's fitness for aviation duty.

2. Flight Duty Status: Upon evaluation, an aviator is found to be Fit for Flight Duty (FFD),

   Temporary Not Fit for Flight Duty (TNFFD), or permanent Not Fit for Flight Duty (NFFD).

   a. Fit for NOAA Flight Duties (FFD):

      1) If the individual is free of any disqualifying conditions, the AMO will sign and date the exam and make a determination of FFD.

      2) If a defect listed as potentially disqualifying for aviation is identified but sufficient cause for conditional approval exists, one of the following two clearance processes will be utilized. The correct process shall be chosen based on the designation of the aviator.

         a) NOAA Corps officers shall provide supporting medical documentation pertinent to the condition in question. Commissioned Personnel Center (CPC) SOP – NOAA Corps Eligibility Determination Process for Aviation and Dive Activities will be used to provide official approval as appropriate. (See Section J: *NOAA Corps Eligibility Determination Process for Aviation and Dive Activities.*)

         b) Aviators who are not commissioned officers shall provide supporting medical documentation pertinent to the condition in question. The AMO shall document the condition following the NOAA Individualized Assessment (IA) policies and submit this documentation to the DOHS for approval. (See Section K: *Individualized Assessment Process*.)

   b. Temporary Not Fit for Flight Duties (TNFFD): When an aviator is found to have a potentially disqualifying condition of relatively short duration, (typically illness or injury) and full resolution is anticipated, the member will be classified as TNFFD until medically cleared to return to flight duties. The AMO may clear the individual for return to flight duties once condition resolves provided there are no potentially disqualifying complications or side-effects.

   c. Permanent Not Fit for Flight Duties (NFFD): (See Section J: *NOAA Corps Eligibility Determination Process for Aviation and Dive Activities*; Section K: *Individualized Assessment Process*)

3. Medical Recommendation for Flying Duty (CG-6020, "Up-chit") AMO responsibilities:

   a. Any medical or dental officer who has a requirement to inform a unit commander of the status of aviation personnel may prepare and sign a "Medical Recommendation for Flying Duty" form (CG-6020) recommending temporary medical suspension and thereby limit the individual to Duties Not to Include Flying (DNIF) (i.e., "grounded").

   b. A DNIF determination requires that the appropriate grounding document (CG-6020) be completed and a notation made in the individual's health record on a "Chronological Record of Medical Care" (SF 600). Causes for temporary grounding include, but are not limited to:

      1) Aviation personnel may seek medical care from a non-aeromedically certified provider including evaluations within the Employee Assistance Program (EAP) for personal/mental health conditions. In this event the member is TNFFD pending evaluation by an AMO/Flight Surgeon (FS) to ensure treatment is consistent with aeromedical standards and the encounter is properly chronicled in the member's health record. This applies regardless of whether the reason or condition for which the care is sought is actually grounding. Certain dental exceptions apply and allow for "auto-UP" after the appropriate period of time has elapsed (see Section S).

      2) When any DNIF recommendation is made by a medical or dental officer, PA, or NP.

      3) When hospitalized or sick-in-quarters.

      4) When treated as an outpatient for a condition or with drugs which are disqualifying for aviation duties.

      5) When interviewed for or entered into a drug/alcohol treatment program.

      6) After an aircraft mishap.

      7) When self-grounding by the member due to a personal assessment that a current condition or limitation presents a safety of flight issue.

      8) When current medical clearance has expired. (See also Section H: Lapsed Medical Examinations and

Flight Clearances)

c. Aviation Medical Officers and Flight Surgeons are the only medical personnel authorized to issue a clearance for flight status. A non-aviation medical officer (MO) or dental officer (DO) may issue a clearance, if related to the scope of their specialty, after concurrence has been received from an AMO/FS. Concurrence can be obtained by either electronic messaging or verbal communication. Clearance notices issued by an MO or DO must include the name, rank, and duty station of the authorizing AMO/FS in addition to the time/date of authorizing communication. The following events require a new "Medical Recommendation for Flying Duty" form (CG-6020) be completed for a member found to be FFD:

1) After termination of any DNIF finding.

2) After completion of a medical screening – quinquennial, annual, or initial.

Note: During the physical exam process, aviation personnel may be continued in a flying status pending correction of minor defects such as obtaining new eyewear prescriptions (provided they are correctable to 20/20 in one eye prior to the prescription change) or dental restorations with the concurrence of an AMO.

3) Flight Crew personnel, upon reporting to a new duty station, or upon being assigned to operational flying duty, or upon returning from an extended absence from flying duty for any reason.

4) After an aircraft mishap.

5) To indicate medical clearance for training (e.g., Dunker, SWET, LPC).

6) Other occasions as required by the AMO.

d. The FFD recommendation shall be submitted to the Chief, Operations Branch. Based on this recommendation the Chief of Operations may authorize resumption of flight duty or training.

e. Medical Clearance Forms that are similar to the NOAA duty status document (CG-6020) and medical waivers which allow unrestricted aviation activities of the other branches of the U.S. Armed Services and Host Allied Nations will be accepted by NOAA when aeromedical support documentation is provided by those services/nations.

Section H: Lapsed Medical Examinations and Flight Clearances

1. Aviation personnel become not medically qualified for aviation duty when their medical examination (UP-chit) expires. Member is grounded after that date and remains so until cleared by an approved AMO.

2. Extensions: The *Medical Recommendation for Flying Duty* (CG-6020) Form may be used by the AMO to extend a currently valid medical examination clearance for a period not to exceed 30 days beyond the end of the birth month. The sole purpose of the extension is to complete a physical examination begun before the current medical examination expires.

3. For NOAA Corps personnel, if medical clearance lapses, CPC may be notified that the individual no longer qualifies for AVIP. CPC may choose to revoke this status until all medical requirements are complete.

Section I: Reporting Changes in Medical Condition

1. It is the aviator's responsibility to notify the AMO/Health Services of any change in medical condition. Failure to provide notification of a new medical condition, including, but not limited to, evaluation by a new provider, determination of new diagnoses, implementation of new therapeutic interventions (medications and modalities), and submission for diagnostics and lab tests will result in an immediate reevaluation for a fitness-for-duty determination. Withholding medical information not only compromises the health and safety of the individual but potentially that of the entire mission crew.

2. Additional medical screening and diagnostics may be required for the specific purpose of ensuring health and safety of all aviation personnel.

3. Any evidence of nondisclosure or falsification of medical information may result in a finding of TNFFD and the member will be limited to DNIF pending investigation into the condition. If an investigation reveals that a member intentionally withheld or falsified information in order to receive or maintain medical clearance such clearance may be administratively denied or terminated and the member may be found permanently NFFD per DOD and USCG standards. See Section O, *Aeronautical Adaptability*.

Section J: NOAA Corps Eligibility Determination Process (EDP)

1. The EDP process is the formal process for the evaluation of NOAA Corps officers to determine eligibility for aviation and dive activities. (See OMAO, CPC SOP 0100-02, NOAA Corps Eligibility Determination Process for Aviation and Dive Activities, 4/14/2016)
2. The EDP process is initiated to evaluate all NOAA Corps aviation applicants as well as current NOAA Corps aviators when they have potentially disqualifying medical conditions or defects as they relate to flight duties.
    a. Temporary Not Fit for Flight Duties (TNFFD): If a condition or defect listed as potentially disqualifying for aviation is identified but sufficient cause for conditional approval exists, the AMO shall follow the current NOAA EDP policy.
    b. Permanent Not Fit for Flight Duties (NFFD): When aviation personnel are found to have a potentially permanent disqualifying condition or defect for aviation, the AMO will complete the required evaluation, document the condition (DD 2808), and issue a grounding slip (NFFD). The AMO shall follow the current NOAA EDP policy.

Section K: Individualized Assessment (IA) Process

1. The IA process is the formal process for evaluating potential medical disqualification from NOAA aviation when an aviator is not a Commissioned Corps officer. It is in compliance with the Rehabilitation Act and is used to determine fitness for aviation duty. (See OMAO Policy 1004, *OMOA Individualized Assessments,* 3/31/14).
2. The IA process is initiated to evaluate potentially disqualifying medical conditions or defects as they relate to flight duties.
    a. Temporary Not Fit for Flight Duties (TNFFD): If a condition or defect listed as potentially disqualifying for aviation is identified in a civilian, but sufficient cause for conditional approval exists, the AMO shall follow the current NOAA Individualized Assessment (IA) policy.
    b. Permanent Not Fit for Flight Duties (NFFD): When civilian aviation personnel are found to have a potentially permanent disqualifying condition or defect for aviation, the AMO will complete the required evaluation, document the condition (DD 2808), and issue a grounding slip (NFFD). The AMO shall follow the current NOAA Individualized Assessment (IA) policy.
3. The IA document preparation and all supporting medical documentation is collected by the AMO and shall be presented in the format delineated in OMAO Policy 1004, *OMOA Individualized Assessments,* 3/31/14.

Section L: Instructions for Completing Medical Examinations

1. The quinquennial NOAA Commissioned Corps Aviation Physical Examination is for NOAA Commissioned aviation personnel and authorized NOAA Commissioned Officer applicants and shall be completed in accordance with NOAA Commissioned Corps policy. This exam may also be used in place of the civilian FAA Class 1 or 2 exams.
2. NOAA Aviation Medical Examination:
    a. Report of Medical History (DD 2807-1) shall be completed by the member and then reviewed by the examiner with the member.
    b. Report of Medical Examination (DD 2808):
        1) **Blocks 17-42** (*Clinical Evaluation*) systems not examined shall be marked “NE”.

2) **Block 43** (D*ental) checks* as appropriate.

3) **Block 44** (*Notes*) used to describe abnormalities identified in *Clinical Evaluation* section. Continue any item in Block 73, as necessary.

   Each aviation physical will have a Valsalva, SBT (Self Balancing Test; e.g., Romberg), and AA (Aeronautical Adaptability) assessment performed and noted.

   Block 44. A normal exam shall include the following:

   AA: SAT

   SBT: Steady

   Valsalva: Pos Bilat

   For abnormal exam, annotate accordingly.

4) **Blocks 45-52** (*Laboratory Findings*) may be left blank as the individually required laboratory tests are submitted separately. By convention, however, for ease of future reference and for continuity with sister services, it is recommended that Blocks 45-48 be completed.

   a) **Block 52a.** Insert PAP date/results, as applicable.

   b) **Block 52b.** Insert EKG date/result.

   c) **Block 52c.** Insert PPD date/result. If PPD converter so state.

5) **Blocks 53-72** (*Measurements and Other Findings*):

   a) **Blocks 53**-**54.** Insert height and weight.

   b) **Block 55.** Leave blank.

   c) **Blocks 56-58a.** Insert vital signs.

   d) **Blocks 58b.-58c.** Insert repeat BP, as necessary.

   e) **Blocks 59-60. L**eave blank.

   f) **Block 61 and Block 63.** Insert distant and near vision.

   g) **Block 62 and Blocks 64-69.** If corrective lenses required, submit Optometry report with exam. Otherwise leave blank.

   h) **Block 70.** Insert IOP.

   i) **Blocks 71a. and 71b.** Leave blank if audiology report submitted with exam. Otherwise, insert appropriate values.

   j) **Block 72a.** Mark SAT/UNSAT for Aviation Candidate Exams only. All others, leave blank.

6) **Block 73** (*Notes and Significant or Interval History*) shall include:

   a) Any continuation of “Notes” from Block 44;

   b) BMI;

   c) Age appropriate or condition appropriate test results as delineated in Appendix A: *NOAA Aviation Physical Exam Requirements*.

7) **Block 74a.** Shall be completed after final exam review by the AOC AMO only.

Note: The AOC AMO shall sign and stamp next to this block.

8) **Block 76.** Insert documentation of any medical waivers on file. If none, leave blank.

9) **Block 77.** (*Summary of Defects*) and **Block 78** (*Recommendations*) insert appropriate comments. If no defects are noted and no recommendations are made, state “None”.

10) **Block 81a.** (*Printed Name of Examiner*) and **Block 81b.** (*Signature*) completed by the examiner.

c. Copy of a Chest X-ray Report (CXR), if a CXR is indicated, performed no longer ago than 24 months preceding the physical exam. All members shall have a baseline CXR on file.

d. Copies of the following lab/diagnostic reports, as appropriate:

1) Requisite labs as delineated in Appendix A: *NOAA Aviation Physical Exam Requirements*.

2) Pulmonary Function Test (PFT) is not required for the quinquennial flight physical unless indicated to evaluate an underlying condition. In that event, the OSHA Respirator Questionnaire will accompany the PFT. Though there is some variability in the "normal" range for PFT results (dependent on age, race, sex, height) an acceptable PFT results will typically be greater than or equal to 80% of predicted. The OSHA Respirator Questionnaire is required for All NOAA quinquennial exams with follow-on PFT only if indicated.

3) If indicated, an Electrocardiogram performed no longer than 12 months preceding the examination. All designated aviation personnel require an EKG every 5-years until age 50. Starting at age 50 the requirement becomes biennial.

Note: Labs should be performed no more than 3 months preceding the physical exam.

e. Other testing as deemed necessary.

3. Standards for Aviation Candidates: See Appendix B of this manual.

4. FAA Medical Certificates will be completed on FAA form 8500-9 and must be completed by a certified FAA Aviation Medical Examiner (AME) in accordance with FAA rules and regulations.

5. Annual Health Assessment (AHA) – required for all NOAA Commissioned Officers receiving AVIP and AOC civilians utilizing the NCCAPE in-lieu-of the FAA class 1 or 2 certification process. The following shall be submitted to the NOAA AMO:

a. Updated Report of Medical History (DD-2807-1);

b. Evidence of up-to-date immunizations and annual PPD (unless PPD converter);

c. Current audiogram (required annual per OSHA Hearing Conservation Program);

d. Current Optometry examination, if corrective lenses required;

e. Current Dental exam. Annual dental exams are required for all aviation personnel. If the last dental exam exceeds 12-months, the aviator will revert to Class IV Dental status which prohibits deployments pending dental evaluation.

6. Medical Recommendation for Flying Duty (CG-6020) (AKA: the Up-chit):

a. The "To" and "From" Blocks and Blocks 1-6 may be filled out by any medical or dental provider and are self-explanatory.

b. "Section A" is for approval of flight duties (FFD) and must be completed by an AMO. All items in Blocks 7-10 are required if making a FFD recommendation. DO NOT LEAVE ANY BLOCKS BLANK.

1) More than one box may be checked for item 7.

2) If corrective lenses are required to achieve 20/20 near or far vision, check "Yes" in Block 8, otherwise check "No". DO NOT LEAVE BLANK.

3) Block 10 will typically be the date the current flight physical expires (birth month aligned), but may vary dependent on clearance reason in Block 7.

4) Blocks 16-18 refer to the provider and are self-explanatory.

c. "Section B" is for grounding (DNIF) and may be filled out by any medical or dental provider regardless of Aeromedical training.

1) For temporary DNIF check box 11 a, b, or e and fill in Blocks 12-18 accordingly. NOTE: In Block 15 a non-AMO provider may not allow the simulator or ground run-up duties.

2) Permanent medical disqualification requires an Eligibility Determination Process (EDP) or Individual Assessment (IA) to be completed and endorsed with a decision memo by the DOHS before a permanent grounding notice is issued.

d. "Section C" is completed by the aviator when advised of his/her flight status. If the member in not available and is advised electronically or via T-con annotate such on "Member's Signature" line in Block 19. If a member refuses to sign, annotate as such in Block 14, "Remarks" and notify member's commander immediately.

e. "Section D" is completed by the AOC Commanding Officer (CO), however this step may be waived by the CO if he or she chooses to appoint the AMO as the final approving authority for the CG-6020.

f. Distribution:

1) An electronic copy of the *Medical Recommendation for Flying Duty* (CG-6020) form is filed in the member's electronic health record. This constitutes the medical recommendation for flight duties.

2) The original form or an electronic copy of the *Medical Recommendation for Flying Duty* form (CG-6020) is given to the individual for his/her personal records.

3) It is the responsibility of the individual to provide a copy of his/her *Medical Recommendation for Flying Duty* (CG-6020) form to the AOC Operations Branch to be filed in the member's training record.

g. Extensions:

The *Medical Recommendation for Flying Duty* form (CG-6020) may be used by the AMO to extend a currently valid medical examination clearance for a period not to exceed 30 days beyond the end of the birth month for the purpose of completing an examination begun before the end of the birth month. In this case Block 7h., "Other", in Section A will be checked and in Block 14, "Remarks", will appear the statement "FFD, Extended 30 days to complete quinquennial PE." Block 10 will be dated the last day of the month following the birth month.

Section M: Performance and Evaluation of Medical Examinations

1. Examiners will record all physical findings on forms DD 2807-1 and DD 2808 or equivalent.
2. In the event a condition or defect listed as "potentially disqualifying" is, in the opinion of the AMO, not considered disqualifying, the AMO must document the reason for this decision via the EDP or IA policy prior to clearing the individual for aviation duty.
3. The list of potentially disqualifying conditions and defects is not all inclusive, but is representative in nature. If an examinee is regarded by the AMO to be not physically qualified (NPQ) for aviation by reason of a condition or defect not specifically noted as cause for rejection, the reason(s) shall be fully documented via the EDP policy listed in Section J: *NOAA Corps Eligibility Determination Process for Aviation and Dive Activities (EDP)* or the IA policy listed in Section K: *Individualized Assessment (IA) Process*.
4. Aviation applicants found to be NPQ by reason of a condition that is not of a serious nature and which can be corrected or cured within a specified reasonable time may be advised to reapply upon correction or cure (e.g., visual acuity corrected to 20/20 following LASIK or PRK procedure) at the discretion of CPC.

Section N: Cardiac Risk Screening

1. Officers assigned to aviation duty are required to undergo limited cardiac screening as part of their medical screening to include evaluation of risk factors listed paragraph 2. below and a Framingham 10-year Risk Assessment. Sections R.14. and R.15. list potentially disqualifying conditions related to coronary and vascular diseases.
2. Personnel with two or more of the following risk factors are considered to be at increased risk for cardiovascular disease:

a. Male over 40 years or female over 50 years of age.

b. Blood pressure consistently over 140 systolic or 90 diastolic.

c. Electrocardiogram abnormalities consistent with cardiac disease.

d. Total Cholesterol elevated above the nationally recognized norm.

e. LDL Cholesterol elevated above the nationally recognized norm.

f. HDL below the nationally recognized norm.

g. Failure to meet body mass index (BMI) targets for age and gender.

3. Individuals at risk may be required to have additional cardiac evaluation for coronary artery disease as described below. A normal evaluation will be considered valid for five years from the date it was performed unless a significant change in the patient's medical status warrants an earlier reevaluation.

   a. An EKG if not performed as part of the original medical screening.

   b. Case dependent additional evaluation in accordance with current guidelines, by direction of the primary care provider, or by direction from the AMO.

Section O: Aeronautical Adaptability

1. Aeronautically adaptable aviation candidates have the potential to adapt to the rigors of the aviation environment by possessing the temperament, flexibility, and appropriate (psychological) defense mechanisms necessary to suppress anxiety, maintain a compatible mood, and devote full attention to flight and the successful completion of a mission.

2. Aeronautically adapted (designated) aviation personnel are those (aviators) who have demonstrated the ability to utilize long term appropriate (psychological) defense mechanisms, and display the temperament and personality traits necessary to manage anxiety, maintain a compatible mood, and devote full attention to flight safety and mission completion.

3. Determination of Aeronautical Adaptability:

   a. A determination of aeronautical adaptability (AA) is required for all flying duty examinations. An unsatisfactory AA as the cause of medical unfitness for flying duty for any flight class is due to an assessment of unsatisfactory aptitude or psychological factors, or otherwise being considered not adaptable for aeronautics.

   b. An unsatisfactory AA is mandatory if any of the following conditions are present:

      1) Adjustment disorders, psychological factors affecting physical condition, conditions not attributable to a mental disorder but are a focus of attention or treatment, and Axis II conditions (personality traits and disorders) that are a primary diagnosis;

      2) Presence of any psychiatric condition which in itself is disqualifying;

      3) Concealment of significant and/or disqualifying medical conditions on the history form or during interviews;

      4) An attitude toward uniform service flying that is clearly less than optimal (e.g., the individual appears to be motivated overwhelmingly by the prestige, pay, or other secondary gains rather than the flying itself);

      5) Clearly noticeable personality traits such as immaturity, self-isolation, difficulty with authority, poor interpersonal relationships, impaired impulse control, or other traits which are likely to interfere with group functioning as a team member in a uniform service setting, even though there are insufficient criteria for a personality disorder diagnosis;

      6) Review of the history or medical records reveal multiple or recurring physical complaints that strongly suggest either a somatization disorder or a propensity for physical symptoms during times of psychological stress;

7) History of arrests, illicit drug use, or social "acting out" which indicates immaturity, impulsiveness, or antisocial traits. Experimental use of drugs during adolescence, minor traffic violations, or clearly provoked isolated impulsive episodes may be acceptable but should receive thorough psychiatric and psychological evaluation;

8) Significant, prolonged and/or currently unresolved interpersonal or family problems (e.g., marital dysfunction, significant family opposition, or conflict concerning the member's aviation career), as revealed through record review, interview, or other sources, which would be a potential hazard to flight safety or would interfere with flight training or flying duty.

c. An unsatisfactory AA may be given for lower levels (signs and symptoms) than those mentioned above if, in the opinion of the FS/AMO the mental or physical factors might be exacerbated under the stresses of uniform service aviation or the person might not be able to carry out his or her duties in a mature and responsible fashion. An individual may be disqualified for any of a combination of factors listed above and/or due to personal habits or appearance indicative of attitudes of carelessness, poor motivation, or other characteristics that are unsafe or undesirable in the aviation environment.

Section P: Resuming Aviation Duties After Surgery, Injury, Illness, or Pregnancy

1. Individuals respond differently to illness, injury, or surgery and recovery times may vary significantly. As such, each situation must be evaluated on a case-by-case basis.

   a. Aviation personnel are required to obtain written clearance from their Primary Care Manager (PCM) or specialist following surgery, injuries requiring more than basic first aid, or significant illness prior to presenting to the AMO for clearance to return to aviation duties.

   b. The AMO will perform a fitness-for-duty examination and make a determination regarding the member's fitness to resume aviation duties.

      1) The member may be required to obtain additional treatment information or submit to additional labs/diagnostics tests, as necessary, to fully assess their medical status prior to the finding of FFD.

      2) In equivocal situations the AMO may forward information to the Director, Office of Health Services for assistance in making a decision.

2. Returning to aviation duty post-partum: As with any injury or illness, the post-partum aviator must obtain medical release from her PCM and requires a fitness-for-duty examination by the AMO. All test results and the Obstetrician's post-partum report must be submitted to the AMO for evaluation and review in order to make a determination regarding return to FFD status.

Section Q: Aviation Duty Standards

1. These standards are intended to identify certain conditions/defects that are potentially disqualifying to aviation based upon risk to the individual, flight crew, or the mission. They also identify those conditions/defects that would likely to be aggravated by the flight environment. Personnel must be aeronautically adaptable and be both physically and mentally able to perform their assigned duties without hazard to themselves or others. Additionally, they must be able to perform emergency procedures in flight, upon landing, and on the ground to include emergency egress. An EDP or IA is required for any medical condition or defect that:

   a. Makes the individual unable to safely perform duties involving flight; and

   b. Within a reasonable period of time after the finding, the condition is not expected to resolve and enable the individual to safely and efficiently perform those duties.

2. Aircrew personnel are required to possess a level of physical fitness and stamina necessary to perform the essential mission and emergency duties of the position. A description of the physical requirements of these duties and the potentially arduous and hazardous conditions under which they must be performed are covered in Appendix G, *Working Conditions*. Each AOC employee assigned to aviation duty must be able to function safely and efficiently in the hazardous environment and under emergency conditions.

3. The Department of Defense (DOD), the Coast Guard (CG) and the Federal Aviation Administration (FAA) have established reasonable standards to ensure that individuals are medically qualified to perform aviation duties. NOAA maintains medical standards consistent with DOD, CG and FAA standards for all personnel who participate in duties involving aerial flight. NOAA or FAA medical certificates are required for all current NOAA flight-related position descriptions. NOAA aviation standards incorporate medical standards published by the DOD, CG or the FAA which ensures individuals are medically fit to perform duties as aircrew.
4. Abnormal laboratory values or diagnostic results are not necessarily disqualifying, though the underlying condition may be. The AMO may request repeat or additional testing, as appropriate, to complete a thorough medical evaluation of the individual.
5. Specific job-related physical abilities are essential for successful performance of the numerous tasks comprising the aircrew duties. Appendices G, H, and I identify the working conditions, specific job-related aircrew tasks, and expected physical abilities for successful performance of these tasks. Aircrew personnel must have no physical impairments or limitations that inhibit performance of the required tasks.

Section R: Potentially Disqualifying Conditions

This section does not contain an exhaustive list. Omission of a particular condition or defect does not imply compatibility with NOAA aviation duty.

Note: The potentially disqualifying conditions described in this section relate specifically to the NOAA Commissioned Corps Aviation Physical Examination for designated aviators only. (For additional standards applicable to Candidates for Flight Training, see Appendix B of this manual.)

1. **Functional Requirements**

   Refer to Appendices G, H and I for a description of working conditions, task analysis, and physical abilities required.

2. **General Chronic Conditions**

   There shall be no organic, functional or structural disease, defect, or limitation that makes the individual unable to safely perform the duties involved in aerial flight and/or poses a threat to the health and safety of the individual, the flight crew, or the mission. This includes degenerative conditions that, within a reasonable period of time, may be expected to make the individual unable to perform those duties. The findings shall be based on the case history and appropriate, qualified medical judgment relating to the condition involved.

3. **Infectious and Communicable Diseases**

   Any communicable disease that directly affects personnel performance and/or directly threatens the health and safety of others is potentially disqualifying. The presence of a communicable disease may not, in itself, be potentially disqualifying. The FS/AMO/APA shall evaluate the underlying condition to assess the likelihood of transmission to other crew members and make a determination for fitness for duty.

4. **Head**

   Any condition of the head or respiratory tract that interferes with the functional ability to breathe, interferes with the wearing of an oxygen mask, precludes the ability to speak over the radio/intercom, or makes the individual susceptible to changes in pressure while involved in aerial flight is disqualifying.

5. **Eyes**

   a. Any condition that interferes with visual acuity or puts the eye at risk is potentially disqualifying. Good visual acuity, peripheral vision, and night vision are integral to the safe performance of aviation duties. Aviation personnel may be required to distinguish potential hazards visually and on radar, recognize colored emergency signals, and be able to guide the operating pilot accordingly. The applicant may be qualified on the condition that he/she wears corrective lenses while in the performance of duties involving flight.

b. Examples of impairments that are potentially disqualifying:

1) Inability to distinguish aviation signal red, aviation signal green, and white;

2) Blindness;

3) Monocular vision;

4) Current cataracts;

5) Proliferative retinopathy;

6) Retinal detachment;

7) Glaucoma (not adequately controlled or with significant visual field loss).

c. Any pathologic condition that may become worse or interfere with proper eye function under the environmental and operational conditions of flying is potentially disqualifying. History of successful corneal refractive surgery is acceptable provided conditions delineated in Appendix D of this manual are met.

6. **Vision**

a. Standards for designated aviators:

1) Distant Visual Acuity: Distant visual acuity shall not be worse than 20/200 in either eye and if worse than 20/20 must be correctable to 20/20 with lenses. When the visual acuity of either eye is worse than 20/20 correction shall be worn at all times while flying.

2) Near Visual Acuity: Uncorrected near vision (both eyes) shall not be worse than 20/200 correctable to 20/20. Multivision corrective lenses must be worn while flying if uncorrected near vision is worse than 20/40 in either eye.

3) Oculomotor Balance: The following are potentially disqualifying:

a) Esophoria greater than 10 prism diopters;

b) Exophoria greater than 10 prism diopters;

c) Hyperphoria greater than 1.5 prism diopters;

d) Prism divergence at 20 feet and 13 inches shall be accomplished only on designated aviators who have sustained significant head injury, central nervous system disease, or who have demonstrated a change in their phorias. These tests are otherwise optional.

4) Color Vision: Normal color perception is required. If demonstrated to be normal on previous exam, may annotate accordingly and defer repeat color test.

5) Depth Perception: Normal depth perception is required. When any correction is required for normal depth perception it must be worn at all times.

6) Field of Vision: The field of vision for each eye shall be normal as determined by the finger fixation test. When there is evidence of abnormal contraction of the field of vision in either eye, the examinee shall be subjected to perimetric form field study. Any contraction of the form field of 15^{o} or more in any meridian is potentially disqualifying.

7) Refraction: There are no refractive limits.

8) Intraocular Tension/Pressure (IOP): Intraocular pressure consistently above 21mm Hg in either eye or a difference of 4 or more between the two eyes is potentially disqualifying and shall be referred for ophthalmologic evaluation.

b. Aviation Candidates: Visual acuity accession standards for aviation candidates differ from designated aviators. Differences are delineated in Appendix B of this manual.

c. Contact Lenses:

1) Designated aviators may be authorized to wear contact lenses while flying, provided the following conditions are met:

a) Only gas permeable disposable soft lenses may be used;

b) The lenses are to be removed during the hours of sleep;

c) The lenses are disposed of after 2 weeks of use.

2) All prescribed optometry follow-up visits shall be adhered to. After routine safe use has been established and documented by the prescribing optometric authority, an annual optometric recheck is required. A copy of the record of any visit to an eye care professional will be furnished by the member to the local FS/AMO/APA for review and placement in the member's Health Record.

3) Following any change in the refractive power of the contact lens, the member must be checked on the Armed Forces Vision Tester (AFVT) to ensure that NOAA Class I standards for acuity and depth perception are met. Additionally, the FS/AMO/APA shall document that there is no lens displacement, when user moves eyes through all 8 extreme ranges of gaze.

4) Contact lens case, ophthalmic saline, and an appropriate pair of spectacles shall be readily accessible (within reach) to the lens wearer while in-flight.

5) The FS/AMO/APA authorizes use of contact lenses after ensuring the safe use and member's full understanding of the conditions of use. This authorization expires after one year and is renewed annually upon successful optometric examination. Annual authorization shall be documented in member's Health Record.

6) Contact lens use is not a requirement for aviation operations and the wearing of contact lenses while performing aviation duties is an individual option. Accordingly, lens procurement and routine optometric care related specifically to contact lens wear is at the member's expense. Government payment is not authorized.

7. **Ears**

a. Aircrew personnel shall have no acute or chronic diseases or conditions of the inner or middle ear.

b. Aviators shall have no disturbance in equilibrium. Recurrent debilitating motion sickness is potentially disqualifying.

8. **Hearing**

a. Aircrew personnel must demonstrate a threshold of hearing in each ear consistent with the following ANSI 1969 standards. Hearing aids are not permitted for use during screening.

500 Hz	**1000Hz**	**2000Hz**	**3000Hz**	**4000Hz**	**5000Hz**
30db	30db	30db	50db	50db	50db

Personnel unable to meet these standards will be retested after a noise-free period of at least 15 hours to verify any hearing impairment.

b. Examples of hearing impairments that are potentially disqualifying:

1) Hearing loss beyond the allowable threshold either ear confirmed by an Audiologist with documented failure of a Speech Discrimination Test (SDT);

2) Significant unilateral hearing loss or a loss that exceeds the 50 percent of normal limits (i.e., auditory acuity in one ear is less than half the acuity of the other ear assuming the "good" ear is within standards).

9. **Nose, Sinuses, and Throat**

a. No condition of the nose, sinuses, throat, or mouth may interfere with or be aggravated by flight. Any abnormality or chronic disease that permanently interferes with breathing, distinct speech, sense of smell, or equilibration of sinus or middle ear pressure is potentially disqualifying.

b. Examples of impairments that are potentially disqualifying:

1) Cleft palate;

2) Anosmia;

3) Chronic sinus block;

4) Chronic Eustachian tube dysfunction.

10. **Mouth/Voice**

a. Distinct speech is required to ensure adequate communication and crew coordination. Disease or malformation of the mouth, dentition, or tongue that interfere with clear and distinct speech is potentially disqualifying.

b. Examples of impairments that are potentially disqualifying:

1) Artificial larynx or esophageal speech (voice box);

2) Chronic stuttering;

3) Mutism.

11. **Dental**

Any dental condition that is affected by pressure change or results in the inability of the aviator to perform aviation duties, affects the ability to speak clearly, impedes ability to don an oxygen mask, or distracts attention due to pain is potentially disqualifying.

See Section S: *Dental Conditions* for specifics.

12. **Neck**

Any condition that limits cervical range of motion, flexibility, or strength required to perform essential aviation duties under normal and emergency conditions is potentially disqualifying.

Refer to Appendices H and I for task analysis and physical abilities required.

13. **Lungs, Chest Walls, Pleura, and Mediastinum**

a. Any disease, defect, or condition that significantly interferes with pulmonary function and/or capacity is potentially disqualifying. Personnel must have the ability to function normally at cabin altitudes between sea level and that altitude where supplemental oxygen is nominally required, and have the ability to use supplemental breathing equipment required at cabin altitudes above 10,000 feet.

b. Examples of impairments that are potentially disqualifying:

1) Asthma:

a) With PFT FEVl value less than 55 percent, or

b) Required regular use of medication to control symptoms.

2) Chronic Obstructive Pulmonary Disease (COPD):

a) Chronic obstructive bronchitis;

b) Emphysema.

3) Pneumonectomy with PFT FEV1 value less than 55 percent;

4) Pneumothorax;

5) Pulmonary Tuberculosis:

a) Active TB or with a history of significant lung destruction;

b) Latent TB with positive tuberculin skin test requires full documentation of appropriate treatment and follow-up.

6) Sarcoidosis.

14. **Heart**

    a. Any disease or condition that interferes with the normal functioning of the vascular system is potentially disqualifying. Of concern is the efficiency of the cardiovascular system and its ability to maintain adequate blood flow and meet the functional oxygen demands of high-stress activity or physical work tasking. Applicants shall have no established medical history or clinical diagnosis of myocardial infarction, angina pectoris, or other coronary artery disease that has required treatment, or if untreated, that has become symptomatic or clinically significant.

    b. Examples of impairments that are potentially disqualifying:

        1) Aneurysm;

        2) Angina;

        3) Cardiomyopathy;

        4) Congestive Heart Failure (CHF);

        5) Coronary Artery Disease (CAD);

        6) Hypertension (uncontrolled with repeated readings exceeding 150 mm/hg systolic and 90 mm/hg diastolic);

        7) Organic heart disease;

        8) Pericarditis;

        9) Myocarditis;

        10) Cardiac arrhythmia.

15. **Vascular System**

    a. Any disease or condition that interferes with the normal functioning of the vascular system is potentially disqualifying. Of concern is the efficiency of the cardiovascular system and its ability to maintain adequate blood flow and meet the functional oxygen demands of high-stress environments or physical work tasking.

    b. Examples of impairments that are potentially disqualifying:

        1) Arteriosclerosis with claudication;

        2) Congenital heart anomalies unless with satisfactory surgical correction;

        3) Reconstructive heart surgery, including grafts, when prosthetic devices are attached to or implanted in the heart;

        4) Aneurysms of any vessel, corrected or uncorrectable, that produces limiting symptoms and precludes satisfactory performance of duty;

        5) Rheumatic fever, active with recurrent attacks, with or without heart damage;

        6) Chronic venous insufficiency with more than mild symptoms despite use of elastic supports (TED);

        7) Thrombophlebitis when repeated attacks require such frequent treatment as to interfere with satisfactory performance of duty;

        8) Varicose veins that are severe and symptomatic despite therapy;

        9) Hypertension regardless of the pressure values if associated with any of the following:

            a) Cerebrovascular symptoms;

            b) Symptomatic arteriosclerotic heart disease;

            c) Impaired of renal function;

            d) Ophthalmic changes of the fundi.

        10) Any condition requiring anti-thrombotic medications other than aspirin.

16. **Abdomen and Gastrointestinal Tract**

    a. Any chronic functional gastrointestinal disorder or structural abdominal defect rendering aviation personnel incapable of sustained attention to flight duties are potentially disqualifying.

    b. Examples of conditions that are potentially disqualifying:

        1) Active Peptic Ulcer Disease (not adequately controlled on medication);

        2) Cirrhosis of the Liver;

        3) Crohn's Disease;

        4) Gastrointestinal Bleeding;

        5) Femoral Hernia (not surgically repaired);

        6) Inguinal Hernia (not surgically repaired);

        7) Pancreatitis;

        8) Acute Viral Hepatitis (after being asymptomatic for 3 months the applicant may be reevaluated);

        9) Chronic Hepatitis that is:

            a) Symptomatic: fatigue, jaundice, cirrhosis;

            b) Asymptomatic (i.e., associated with elevated total serum bilirubin).

17. **Upper Extremities**

    a. Amputation of part or parts of an upper extremity equal to or greater than any of the following may be potentially disqualifying:

        1) A thumb to the metacarpophalangeal joint;

        2) Two fingers of one hand;

        3) One finger, other than the little finger, at the metacarpophalangeal joint and the thumb of the same hand at the interphalangeal joint.

    b. Joint ranges of motion: Any condition that limits range of motion, flexibility, or strength required to perform essential aircrew tasks under normal and emergency conditions is potentially disqualifying. Refer to Appendices H and I for task analysis and physical abilities required. See USCG MEDMAN, Ch. 3. Section F., *Physical Standards Applicable to All Personnel (Regular and Reserve) For: Reenlistment; Enlistment of Prior Service USCG Personnel; Retention; Overseas Duty; and Sea Duty* for specific measurements.

18. **Lower Extremities**

    a. Amputation of part or parts of an upper extremity equal to or greater than any of the following may be potentially disqualifying:

        1) Loss of a toe or toes that precludes the ability to run, walk without a perceptible limp, or to engage in fairly strenuous jobs;

        2) Any loss greater than that specified above to include foot, leg, or thigh.

    b. Internal derangement of the knee: Residual instability following remedial measures, if more than moderate; or with recurring episodes of effusion or locking, resulting in frequent incapacitation.

    c. Joint ranges of motion: Any condition that limits range of motion, flexibility, or strength required to perform essential aircrew tasks under normal and emergency conditions is potentially disqualifying. Refer to Appendices H and I for task analysis and physical abilities required. See USCG MEDMAN, Ch. 3. Section F., *Physical Standards Applicable to All Personnel (Regular and Reserve) For: Reenlistment; Enlistment of Prior Service USCG Personnel; Retention; Overseas Duty; and Sea Duty* for specific measurements.

19. **Spine and Sacroiliac Joints**

    Any condition that limits range of motion, flexibility, or strength required to perform essential aircrew tasks under normal and emergency conditions is potentially disqualifying. Refer to Appendices G, H, and I for Working Conditions, Task Analysis, and Physical Abilities Required.

20. **Miscellaneous Conditions of the Bones and Muscles**

    a. Disorders affecting the musculoskeletal system that adversely affect the individual's ability to meet the basic movement, strength, flexibility, dexterity, and coordinated balance criteria are potentially disqualifying.

    b. Examples of impairments that are potentially disqualifying:

        1) Severe rheumatoid or osteoarthritis;

        2) Chondromalacia Dessicans;

        3) Fractures: malunion, nonunion, or bony fusion defect;

        4) Bony or fibrous ankylosis;

        5) Loss of motor ability secondary to tendon or nerve injury;

        6) Herniated disk;

        7) Flaccid or spastic paralysis of muscles.

21. **Urinary System**

    a. Any functional disorders rendering aviation personnel incapable of sustained attention to flight duties are potentially disqualifying.

    b. Examples of impairments that are potentially disqualifying:

        1) Nephrosis;

        2) Polycystic kidney disease;

        3) Hydronephrosis;

        4) Glomerulonephritis, chronic;

        5) Chronic cystitis;

        6) Chronic and recurrent renal calculi.

22. **Integumentary System**

    Chronic symptomatic dermatologic conditions of a nature that are distracting to the individual and impede performance of essential aviation duties are potentially disqualifying.

23. **Gynecologic**

    Any functional gynecologic disorder that is regularly symptomatic and incapacitating to a degree that renders an aviator incapable of performing flight duties and necessitates recurrent absences of more than 1 day/month is potentially disqualifying (e.g., dysmenorrhea, endometriosis, menopausal syndrome).

24. **Pregnancy**

    a. Due to the physiologic stressors and potential hazards associated with flight, pregnant flight personnel shall inform the AMO upon first suspicion of pregnancy. Upon verification, pregnant aviators are grounded for the duration of the pregnancy (to 6-weeks post-partum). A clearance to continue in flight status (up to 27-weeks' gestation) may be granted by the Commanding Officer, AOC following the protocol delineated in Appendix E: *Pregnancy in Aviation*. Consideration for such clearance shall be based on desire of the pregnant aviator to continue flying; the formal recommendation and concurrence of her obstetrician; and the recommendation and concurrence of the local AMO. The member shall submit her request to her commanding officer with these endorsements. Her request should

acknowledge an understanding of the potential risks of continued flying during pregnancy. Nausea, decreased appetite, easy fatigability, dizziness, and vaginal bleeding are only some of the potential problems that may cause the AMO to recommend temporary grounding for pregnant aviation personnel. Obstetric care and case management is required. Progress of pregnancy shall be monitored by the AMO to ensure early identification of problems that could be hazardous to the fetus, the member, or others. It shall remain within the prerogative of the Commanding Officer to deny the aviator's request in spite of favorable medical recommendations.

b. The AMO will utilize the checklist, *Risk Assessment for Pregnant Employees*, contained in Appendix E to assess the ergonomic and toxic hazards to which the pregnant aviator and her fetus may be exposed in her particular aviation environment. Potential occupational health problems will be brought to the attention of the pregnant aviator and the command to allow for risk elimination or separation of the aviator from the potential hazard.

c. No pregnant member shall perform duties involving flying after the end of the second trimester (27-weeks) nor shall a pregnant member undergo physiologic training (low-pressure chamber, dunker, SWET, etc.) or training involving swimming without explicit clearance from her obstetrician and concurrence by the AMO.

d. Due to increased exposure to radiation at higher altitudes, experienced during hurricane conditions, no pregnant member shall participate in reconnaissance/surveillance flights of hurricanes. (See Appendix E, Flight Surgeon memo)

e. Due to expected, increased-turbulence exposures during flights through forming and formed hurricanes, no pregnant member shall participate in flights intended to encounter those conditions. (See Appendix E, Flight Surgeon memo)

25. **Endocrine and Metabolic Disorders**

a. Any excess or deficiency in hormone production can produce metabolic disturbances affecting weight, stress adaptation, energy production, and a variety of other symptoms. Any condition affecting normal hormonal/metabolic functioning and response that is likely to adversely affect safe and efficient job performance is potentially disqualifying.

b. Examples of impairments that are potentially disqualifying:

1) Adrenal Dysfunction (e.g., Addison's Disease or Cushing's Syndrome);

2) Thyroid Dysfunction (not controlled and unstable);

3) Pituitary Dysfunction;

4) Insulin Dependent Diabetes Mellitus: Due to the dependence on food intake at regularly scheduled intervals and the unpredictable nature and duration of duties, IDDM is disqualifying.

26. **Blood and Blood-Forming Tissue**

a. Any disorder that reduces the capability to perform intense physical activity and limits the tolerance for exertion or grossly impedes stamina and thereby places the aviation personnel at undue risk is potentially disqualifying.

b. Examples of impairments that are potentially disqualifying:

1) Severe anemia;

2) Thrombocytopenia;

3) Thrombotic disorders;

4) Coagulation disorders.

27. **Systemic Diseases**

Any organic, functional, or structural disease, defect, or limitation that the examiner determines makes the individual unable to safely perform the duties involved in aerial flight is potentially disqualifying. Examples include:

a. Chronic wasting disease;

b. Metastatic disease;

c. Blastomycosis;

d. Brucellosis; chronic with substantiated recurring symptoms;

e. Leprosy (any type);

f. Myasthenia gravis;

g. Porphyria Cutanea Tarda;

h. Sarcoidosis, progressive (with severe or multiple organ involvement and not responsive to therapy);

i. Tuberculosis (TB), active;

j. Neurosyphilis (symptomatic in any form).

28. **Tumors and Malignant Diseases**

a. Malignant Neoplasms: Unresponsive to therapy or when residua of treatment are in themselves potentially disqualifying or preclude satisfactory performance of flight duties.

b. Benign Neoplasms: Though generally amenable to treatment, potentially disqualifying exceptions include ganglioneuroma and meningeal fibroblastoma (with brain involvement). Individuals who refuse treatment are potentially unfit only if their condition precludes satisfactory performance of duties.

c. Neoplastic conditions of lymphoid and blood forming tissues are potentially disqualified.

d. Any tumor or metastatic disease which makes the individual unable to perform the essential duties involving aerial flight is potentially disqualifying.

29. **Neurologic Disorders**

a. Any neurologic dysfunction (e.g., problems with coordinated balance, disturbances of consciousness, limited physical dexterity, etc.) that increases the probability of accidents and/or inhibits the ability to perform a variety of physical tasks is potentially disqualifying.

b. Examples of impairments that are potentially disqualifying:

1) Epilepsy or Convulsive Disorders: Must be seizure-free with or without medication for at least 12-months and meet the state requirements for operating a motor vehicle;

2) Any disturbance of consciousness without a satisfactory etiologic explanation;

3) Multiple Sclerosis;

4) Cerebrovascular disease (includes aneurysms and vascular malfunctions);

5) Cerebral Palsy;

6) Parkinsonism.

30. **Psychiatric Disorders**

a. Any neurosis, mental condition, or factitious disorder that the examiner determines makes the applicant unable to perform duties involving flight or may reasonably be expected within the applicable period make him/her unable to perform those duties is potentially disqualifying. The findings shall be based on case history, and the appropriate qualified medical judgment relating to the condition involved.

b. A personal history or clinical diagnosis of the following disorders is potentially disqualifying:

1) Psychosis;

2) Anxiety Disorders;

3) Dissociative Disorders;

4) Major Affective Disorders;

5) Schizophrenic Disorders;

6) Paranoid Disorders;

7) Personality Disorders;

8) Adult Attention Deficit Disorder;

9) Organic Brain Syndrome (e.g., dementia, or recurrent delirium).

c. Any acute or chronic psychiatric control medication requirement in which the medication taken results in an alteration of perception, judgment, or behavior is potentially disqualifying.

31. **Substance Abuse/Dependence**

a. Substance Abuse, Substance Dependence, and Related Substance Use Disorders includes, but is not limited to, the chronic use of or addiction to alcohol, barbiturates, other sedatives/hypnotics, muscle relaxants, anxiolytics, opiates, central nervous system stimulants (e.g., cocaine, amphetamines), hallucinogens, cannabis, or volatile solvents.

b. Examples of impairments that are potentially disqualifying:

1) Alcohol dependence: Confirmed alcoholism by a licensed provider, unless there is established evidence, satisfactory to the examiner, of recovery, including sustained abstinence from alcohol for not less than the preceding 2 years;

2) Drug (other than alcohol) dependence: Confirmed by a licensed provider, as evidenced by a habitual or clear sense of need for the drugs, unless there is established evidence of recovery for not less than the preceding 2 years.

32. **Miscellaneous Potentially Disqualifying Conditions/Defects**

a. Chronic Fatigue Syndrome, Fibromyalgia, and Myofascial Syndrome when not controlled by medication.

b. Required chronic use of anti-coagulants other than aspirin (e.g., Coumadin®).

c. Chronic use (more than 30 days/year) of immunosuppressive medications including steroids.

d. Transplant recipient: Transplant recipients of any organ or tissue except hair or skin.

e. Sexually Transmitted Diseases: Complications or residua of chronic disease of such severity that the individual is incapable of performing useful duty.

33. **Medications**

Any acute or chronic use of medication that results in an alteration of perception, judgment, or behavior is potentially disqualifying. See Appendix F: *Medication Use in Aviation Personnel* for guidance.

Section S: Dental Conditions

1. Annual dental exams are required for all aviation personnel. If a member's last dental exam is greater than one year ago, the member is considered Class IV (non-deployable) until evaluated and any limiting issues resolved.

2. Due to the effects that barometric pressure may have on teeth and adjacent tissues, all aviation personnel should strive to maintain themselves in Dental Class I status (no dental treatment, re-evaluations, or restorations required; worldwide deployable).

3. Personnel who have dental work done under local anesthesia shall be grounded for six hours to allow the effects of the anesthetic to subside (numbness, slurred speech, etc.). Aviator is automatically UP after this period unless complications arise.
4. Personnel undergoing more extensive dental procedures (extractions, root canal, crown prep etc.) shall be grounded for a minimum of twelve hours. Aviator is automatically UP after this period unless complications arise.
5. The following conditions are potentially disqualifying until treated:
    a. Any dental condition that may potentially react adversely to sudden changes in barometric pressure or produce indistinct speech by direct voice or radio transmission;
    b. Fixed active orthodontic appliances (e.g. braces). The exception is a fixed retainer which is not potentially disqualifying;
    c. Routine prosthetic (crown) and temporary dental treatments are not potentially disqualifying for aviation duties. Recommend that temporary crowns, bridges, or fixed partial dentures be cemented with permanent cement like polycarboxylate or zinc oxyphosphate cement until the permanent crown, bridge, or fixed partial denture is delivered. Personnel are temporarily grounded for 12 hours after such procedures. Such treatment may be temporarily disqualifying for deployment until completed but is not necessarily potentially disqualifying for routine aviation duties.
6. Dental Classification of Individuals: Dental classifications are used to designate the health status and the urgency or priority of treatment needs for personnel. The following standards are used to classify dental patients:
    a. Class I: Patients with a current dental examination and do not require dental treatment or reevaluation. Class I patients are worldwide deployable.
    b. Class II: Patients with a current dental examination and require non-urgent dental treatment or reevaluation for oral conditions, which are unlikely to result in dental emergencies within 12 months. Class II are worldwide deployable.
    c. Class III: Patients who require urgent or emergent dental treatment. Class III patients are normally considered NOT worldwide deployable. Local command clearance may be received dependent on operational necessity.
    d. Class IV: Patients who require serial dental examinations/treatments or patients with unknown dental classifications (> 1year since last dental evaluation). Class IV patients are considered NOT deployable.

Section T: Exogenous Factors

Aviation personnel must have operational physiological and psychological fitness in order to perform their duties. This fitness may be affected by a variety of exogenous factors. These factors may be hardly perceptible and have a negligible effect in everyday life but may have a considerable impact on aviator efficiency and safety.

1. Administration of medications/supplements: Aviation personnel are restricted from the self-administration of medications/supplements. All substances should be dispensed by or with the knowledge of the FS/AMO/APA. Appendix F: *Medication Use in Aviation Personnel* of this manual shall guide the use of medications/supplements.
2. Immunizations:
    a. Because of the possibility of adverse reactions (both local and systemic), aviation personnel who receive immunizations shall be grounded for 12 hours following immunization(s). Grounding for an uncomplicated immunization requires no formal paperwork (i.e. Down-chit/Up-chit) and member is considered “auto-up” after 12 hours. Further temporary grounding may be necessary for significant immunization side effects until resolved.
    b. Due to the required 12 hour grounding policy, medical departments should coordinate with Flight Scheduling to minimize operational impact.

3. Immunotherapy: Allergy desensitization (immunotherapy) is permitted in aviation personnel providing the underlying condition is not potentially disqualifying or the member has undergone an IA where fitness for duty with immunotherapy was the formal outcome. As with immunizations, personnel should be grounded for 12 hours after receiving allergy immunotherapy.

4. Alcohol use: Aviation personnel are restricted from aerial flight for 12 hours after last alcohol use and must have no residual effects. This includes the use of "low" and "no" alcohol beer. Residual effects include, but are not limited to, fatigue, lightheadedness, weakness, nausea, diarrhea, and headache.

5. Blood donation: Aviation personnel:

    a. Shall obtain permission from the commanding officer before donating blood;

    b. Shall be grounded for 72 hours after a donation of 200 cc or more of blood;

    c. Shall be grounded for a period of 7 days after a donation of 500 cc or more of blood; Note: the standard unit of donated blood is less than 500 cc;

    d. Shall not donate blood more often than every 120 days;

    e. Aviation personnel should not be permitted to engage in flights above 35,000 feet, night flying, or other demanding flights for a period of one week after blood donation;

    f. An examination by FS/AMO/APA is not required for return to full flight status.

6. Bone Marrow donation:

    a. Aviation personnel selected for and undergoing bone marrow donation are grounded for a minimum of 7 days. Note: Stem cell donation in lieu of actual bone morrow aspiration falls under blood donation restricts noted above.

    b. Upon reevaluation, the medical officer may determine that an additional grounding period and/or convalescent leave is necessary.

    c. Return to full flight status must include a satisfactory medical examination and repeat CBC evaluation and clearance by FA/AMO.

7. Decompression experience: Aviation personnel are restricted from flight duty until fully evaluated and released for flight duty by a Flight Surgeon when symptoms or reactions occur during or after decompression.

8. Diving: The incidence of decompression sickness during aerial flight is significantly enhanced after exposure to an environment of increased atmospheric pressure such as SCUBA diving.

    a. Aviation personnel will not fly or perform low-pressure chamber "runs" for 24 hours following SCUBA diving, compressed air dives, or hyperbaric chamber dives. If an urgent operational requirement dictates, aviation personnel may fly within less than 24 hours of SCUBA diving only after examination and clearance by a FS/AMO/APA and the authorization of the commanding officer.

    b. Aviation personnel are restricted from flying following any decompression symptoms during or following a dive until examined and cleared by a FS/AMO/APA.

9. Tobacco abuse: Aviation personnel are discouraged from smoking tobacco at all times. Carbon monoxide has a deleterious effect on night vision as well as a detrimental effect on the physiologic effects at any altitude of flight. Use of any tobacco products is prohibited during the performance of flight duties and aboard any government aircraft.

10. Vision: Aviation personnel are required to have at least 20/20 vision (corrected or uncorrected) while performing flight duties. Personnel wearing corrective lenses or contact lenses during flight duties shall maintain an extra set of corrective lenses on their person in the event of loss of spectacles or a contact.

APPENDIX A
NOAA Aviation Physical Examination Requirements

1. The **NOAA Commissioned Corps Aviation Physical Examination** for rated aviators is required quinquennially (annually if age 50+) and shall include the following items, as applicable:
   a. Current Report of Medical History (DD 2807-1).
   b. Labs (All labs to be performed within 90-days of the exam).
      1) Routine labs required for ALL aviation exams:
         a) Urinalysis (U/A macro);
         b) Complete Blood Count (CBC) with differential;
         c) Complete Metabolic Panel (CMP);
         d) Lipid panel, fasting;
         e) RPR;
         f) HIV (force screen).
      2) ***If member takes a statin-class medication (Lipitor, Zocor, Pravachol, etc.) to control cholesterol*:**
         - Creatine Kinase (CK).
      3) ***For males starting at age 40*:**
         - Prostate Specific antigen (PSA). Report result in Block 73 of *Report of Medical Examination* (DD 2808).
   c. ECG within 4 years of exam, if age > 50 then ECG is required every 2 years.
   d. Chest X-ray initial baseline required in health record. Repeat only if medically indicated and upon retirement.
   e. Immunizations/Tests:
      1) Tuberculin Skin Test (TST) (annual requirement);
      2) Routine immunizations, update as necessary.
   f. Audiogram (annual requirement).
   g. Dental examination and cleaning (annual requirement). If member's last dental exam is more than 1-year ago, member is Dental Class IV (non-deployable) until examined and status verified.
   h. Optometry (within 6-months of exam):
      1) Gross near and distant visual acuity;
      2) Refraction required ONLY if near and distant vision are not both 20/20 (or better) uncorrected;
      3) Tonometry (Intraocular Pressure/Tension).
      4) ***If member has had corneal refractive surgery (LASIK/PRK)*:**
         a) Complete Optometry examination including refraction;
         b) Complete the Quality of Vision Questionnaire (see AOC, Medical).
   i. Include the following in Block 73. of the *Report of Medical Examination* (DD 2808):
      1) BMI;
      2) FBS;
      3) Results of lipid panel;
      4) Framingham Risk Assessment (starting at age 40).

j. Females: Full well-woman exam including PAP (within 12-months of exam). Omit PAP if history of total hysterectomy.

k. Special Exams/Diagnostics:

1) ***For males starting at age 40:***

- Digital Rectal Exam (prostate).

2) ***For females starting at age 40:***

- Screening Mammogram (within 12-months of exam).

3) ***For both males and females beginning at age 50 (earlier if first-degree relative has had a diagnosis of colorectal cancer at age younger than 60):***

- Colonoscopy (within 10-years of exam, more recent if indicated).

Note: Requirements for the Aviation Candidates differ from those noted above and are delineated in Appendix B of this manual.

2. The **Annual Health Assessment** for NOAA Commissioned Corps Aviators shall include the following items, as applicable:

a. Updated Report of Medical History (DD 2807-1);

b. Audiogram;

c. Dental Examination;

d. Optometry Examination (if indicated);

e. Annual PPD and up-to-date Immunizations.

3. The **NOAA Aircrew Medical Examination** shall include the following items, as applicable.

a. Initial Physical Examination (all ages):

1) Medical History (DD 2807-1);

2) Aviation Physical Exam (DD 2808);

3) Labs:

a) Urinalysis, macro (microscopic, if indicated);

b) Complete Blood Count (CBC) with differential;

c) Complete Metabolic Panel (CMP);

d) Lipid panel, fasting.

4) Visual acuity (distant/near);

5) Optometry exam with refraction if acuity less than 20/20 uncorrected;

6) CXR (within 24 months);

7) ECG (within 12 months);

8) Reading Aloud Test;

9) OSHA Respiratory Questionnaire (within 6 months); Spirometry, as indicated.

b. Periodic Physical Examination (all ages)*:

1) Updated Report of Medical history (DD 2807-1);

2) Aviation Physical Exam (DD 2808);

3) Labs:
    a) Urinalysis, macro (microscopic, if indicated);
    b) Complete Blood Count (CBC) with differential;
    c) Complete Metabolic Panel (CMP);
    d) Lipid panel, fasting.
4) Visual acuity (distant/near);
5) Optometry exam with refraction if acuity less than 20/20 uncorrected.

c. Additional biennial tests (age 50+):
1) ECG;
2) Tonometry (Intraocular Pressure/Tension);
3) Fecal Occult Blood Test (if indicated).

***Note: A current FAA Medical Certificate (Class 3) may be used as a substitute for the periodic NOAA Aircrew Medical Examination.**

APPENDIX B

NOAA Aviation Physical Examination Standards for Aviation Candidates

Candidates for flight training shall meet all the requirements of a designated aviator delineated in Appendix A of this manual. Additionally, the following requirements and limitations apply.

1. Vision Standards:
   a. Uncorrected distant visual acuity must be not less than 20/50 each eye and correctable to 20/20 each eye.
   b. Uncorrected near visual acuity must be not less than 20/20 each eye.
   c. While under the effects of a cycloplegic, the candidate must read 20/20 each eye. The following are potentially disqualifying:
      1) Total myopia greater than (minus) -1.50 diopters in any meridian;
      2) Total hyperopia greater than (plus) +3.00 diopters in any meridian;
      3) Astigmatism greater than (minus) -1.00 diopters.

Note: The purpose of the cycloplegic examination is to detect large latent refractive errors that could result in a change of classes during an aviation career. Therefore, the maximum correction tolerated at the acuity of 20/20 shall be reported.

   d. Corneal Refractive Surgery (CRS):
      1) Laser in-situ keratomileusis (LASIK), laser subepithelial keratomileusis (LASEK), photorefractive keratectomy (PRK), and wave-front guided PRK (WFG-PRK) are currently acceptable CRS methods for all aviation classes including applicants. NOAA will consider sending candidates for flight training who have had CRS by either a DOD or a civilian provider and meet all other enrollment criteria. CRS is an elective procedure and specific guidelines are outlined in Appendix D of this manual.
      2) Candidates must have demonstrated refractive stability as confirmed by clinical records. Neither the spherical or cylindrical portion of the refraction may have changed more than 0.50 diopters during the two most recent postoperative manifest refractions separated by at least one month. The final manifest shall be performed no sooner than the end of the minimum waiting period (3 or 6 months depending on the degree of preoperative refractive error). The member must have postoperative uncorrected visual acuity of at least 20/50 correctable with lenses to at least 20/20 for near and distance vision.

2. Height:
   a. Minimum height - 157.4 cm (62 inches); Maximum height - 198 cm (78 inches);
   b. Candidates must satisfy the following anthropometric requirements. All results shall be reported in Block 73 (*Notes and Significant or Interval History*), Report of Medical Examination, DD-2808. Refer to Appendix C, *Anthropometric Measurement**s***, for guidelines on obtaining accurate measurements.
      1) Sitting Height (SH): 33 inches to 40.9 inches. Report as (SH_____);
      2) Sitting Eye Height (SEH): 28.5 inches or greater. Report as (SEH_____);
      3) Thumb-Tip Reach (TTR): 28.5 inches or greater. Report as (TTR____);
      4) Buttock-Knee Length (BKL): 21 inches to 27.9 inches. Report as (BKL____);
      5) Add Sitting Eye Height (SEH) and Thumb-tip Reach (TTR): 57 inches or greater. Report as (SEH + TTR =____).

3. Hearing: Baseline audiometric loss in excess of the limits set forth in the following table is potentially disqualifying:

FREQUENCY	500	1000	2000	3000	4000
EITHER EAR	30	25	25	45	45

4. Personality: Must demonstrate, in an interview with the Flight Surgeon, a personality make-up of such traits and reaction that will indicate that the candidate will successfully survive the rigors of the flight training program and give satisfactory performance under the stress of flying. See Section N, *Aeronautical Adaptability* for specifics.
5. Reading Aloud Test:
    a. Required if speech impediment exists or if any history of speech therapy, or maxillofacial surgery. If indicated, administer the reading aloud test (RAT) to aviation training applicants as a standardized assessment of the individual's ability to communicate clearly in the English language, in a manner compatible with safe and effective aviation operations. Current communication systems degrade speech intelligibility. The radio environment separates the speaker and the listener from the benefits of watching lips and body language cues. Those with marginal English skills have problems communicating effectively in the operational aviation environment.
    b. The RAT is a phonetic exercise with subjective assessment by the FS/AMO. If indicated, applicants should read the RAT clearly and deliberately without hesitation, error, or stuttering. The test is scored as "RAT-SAT" or "RAT-UNSAT" in Block 72a. of the Report of Medical Examination, DD-2808.
    c. Instruct the applicant to stand erect and read:

    "You wished to know all about my grandfather. Well, he is nearly 93 years old; he dresses himself in an ancient black frock coat, usually minus several buttons; yet he still thinks as swiftly as ever. A long flowing beard clings to his chin giving those who observe him a pronounced feeling of the utmost respect. When he speaks, his voice is just a bit cracked and quivers a trifle. Twice each day he plays skillfully and with zest upon our small organ. Except in winter when the ooze of snow or ice is present, he slowly takes a short walk each day. We have often urged him to walk more and smoke less, but he always answers, 'Banana oil!' Grandfather likes to be modern in his language."
6. Chest x-ray. Aviation trainees must have had a chest x-ray within the past 3 years.

APPENDIX C

Anthropometric Measurements

Sitting Height (SH)

Purpose: This measurement is important in the design and layout of work stations occupied by NOAA personnel. Controls must be placed in numerous locations, and the minimum acceptable space between the helmet/head and the canopy/overhead of cockpits must be considered.

Equipment Required: Anthropometer

Measurement Procedure:

1. The subject sits erect facing forward with the head level (see pictures below), the shoulders and upper arms relaxed, and the forearms and hands extended forward horizontally with the palms facing each other. The thighs are parallel, and the knees are flexed 90° with the feet in line with the thighs.
2. Measure the vertical distance between the sitting surface and the top of the head with an anthropometer. The shoulders and upper extremities should be relaxed. Measure at the maximum point of quiet respiration.

Note: ***Measurements are to be taken to the nearest eighth of an inch. The measurement should be taken at least twice. If there is a large variation between the two measurements, recheck body position and repeat the measurements.***

Sitting Eye Height (SEH)

Purpose: Sitting Eye Height plays a decisive role in instrument panel layout, viewing angles, and seat adjustment. The pilot must have optimum vision both inside and outside of the cockpit.

Equipment Required: Anthropometer

Measurement Procedure:

1. The subject sits erect facing forward with the head level (see pictures below), the shoulders and upper arms relaxed, and the forearms and hands extended forward horizontally with the palms facing each other. The thighs are parallel and the knees are flexed 90° with the feet in line with the thighs.
2. Measure the vertical distance between the sitting surface and the corner or angle formed by the meeting of the eyelids on the outer corner of the right eye with an anthropometer.

NOTE: Measurements are to be taken to the nearest eighth of an inch. Measurements should be taken at least twice. If there is a large variation between the two measurements, recheck body position and repeat measurements.

Thumb-Tip Reach (TTR)

Purpose: This measurement is important in the design and layout of work stations occupied or used by NOAA personnel. Thumb-tip reach is particularly useful for the placement of controls in various locations within cockpits.

Equipment Required: Wall-mounted linear scale.

Measurement Procedure:

1. The subject stands erect in a corner looking straight ahead with the feet together and heels 7.87 inches (20 cm) from the back wall (see pictures below).
2. With the buttocks and shoulder placed against the wall, the right arm and hand (palm down) are stretched horizontally along the scale while the thumb continues along the horizontal line of the arm with the index finger curving around to touch the pad at end of the thumb.
3. The subject's right shoulder is held against the rear wall. The horizontal distance from the back wall to the tip of the right thumb is measured.

NOTE: Measurements are to be taken to the nearest eighth of an inch. Measurements should be taken at least twice. If there is a large variation between the two measurements, recheck body position and repeat measurements.


Buttock-Knee Length (BKL)

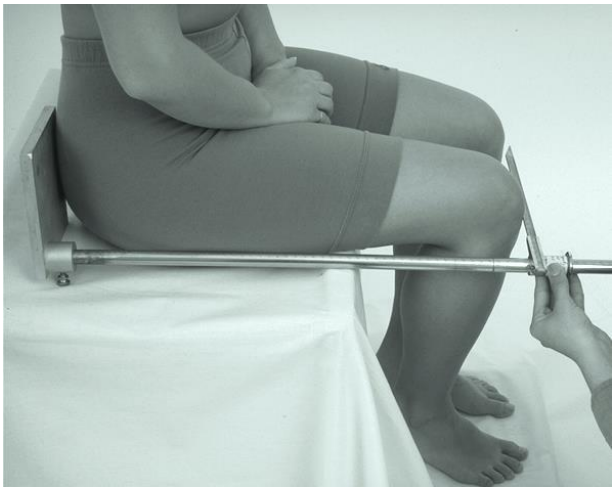
Purpose: This measurement is usually associated with ejection seat clearance and threshold values between the knee and the glare shield (or canopy bow).

Equipment Required: Anthropometer

Measurement Procedure:

1. While the subject sits erect, draw a landmark on the bottom tip of the right knee cap. The subject's thighs should be parallel, with the knees flexed at 90°. The feet should be in line with the thighs, and lying flat on the surface of a footrest or the floor (see pictures below).
2. The anthropometer is placed flush against the buttock plate at the most posterior point on either buttock, and the anterior point to the right knee is measured with an anthropometer.

NOTE: Measurements are to be taken to the nearest eighth of an inch. Measurements should be taken at least twice. If there is a large variation between the two measurements, recheck body position and repeat measurements.

APPENDIX D

Corneal Refractive Surgery

1. Corneal Refractive Surgery (CRS) is indicated for the correction of refractive error (myopia, hyperopia, or astigmatism). The following information applies:

   a. Only Laser In-situ Keratomileusis (LASIK), Laser Subepithelial Keratomileusis (LASEK), Photo Refractive Keratectomy (PRK) and Wave-Front Guided PRK (WFG-PRK) are currently acceptable CRS methods for all classes including applicants.

   b. Other corneal refractive surgery, rings, or implants are potentially disqualifying.

   c. Uncomplicated, successful completion of LASIK, LASEK, or PRK resulting in visual acuity within standards and a satisfactory pre/post-surgical assessment (as outlined below) will be qualified as *Information Only* on medical examination and does not require an Eligibility Determination Process or Individualized Assessment.

   d. All cases outside of standards will require an Eligibility Determination Process or Individualized Assessment prior to clearance for flight duty. This includes alternate procedures, complications, and failure to meet pre/post-op standards.

   e. CRS is considered elective surgery. Personnel considering CRS must receive authorization from their Commanding Officer prior to the procedure. Commanders should be advised that the procedures have a minimum of a 3 month recovery period before aviation medical clearance can be granted.

   f. NOAA Corps aviators may only have CRS performed while in a non-flying billet.

   g. As with all types of elective surgery, any complications or adverse outcomes related to CRS are the responsibility of the aviator and, if severe enough, may result in administrative action to include permanent medical disqualification from flight duties.

2. All pre-operative, operative, and post-operative medical records must be submitted for review by the NOAA AMO.

   a. Preoperative refractive limits:

      1) Sphere: -8.00 to +6.00 diopters;

      2) Cylinder: -3.00 to +3.00 diopters;

      3) Anisometropia: 3.5 diopters.

   b. Post-operative refractive stability:

      1) Evidence of post-operative refractive stability shall be demonstrated by two consecutive manifest refractions obtained at least 30 days apart. Refractive stability is defined by a less than a 0.50 diopters change over the two exams.

      2) For those with a pre-operative refraction of plano to -5.50 diopters of sphere, the initial post-operative manifest refraction should be no sooner than 30 days after the surgery. A follow up manifest refraction shall be done no sooner than 30 days after the initial post-operative refraction.

      3) For those with a pre-operative refraction of -5.75 to -8.00 diopters of sphere or +0.25 to +6.00 diopters of sphere, the earliest initial post-operative manifest refraction is at 6 months.

      4) Medical clearance will not be considered until refractive stability is achieved.

3. Post-operatively the member must meet all aviation visual standards delineated in this manual. If the evaluation is outside the CRS policy standards an Eligibility Determination Process or individualized assessment must be initiated.

4. Information required for medical clearance following Corneal Refractive Surgery:
    a. Documentation that at least 3 months have elapsed since surgery/re-treatment and stable refractive error is demonstrated by two separate examinations performed at least one month apart;
    b. Pre-operative refraction: Cycloplegic preferred; manifest is an acceptable substitute;
    c. Type of procedure: LASIK, LASEK, or PRK;
    d. Date of procedure(s): to include "enhancements" or "touch ups";
    e. Post-op Measurements: only the latest set of measurements is required;
    f. Refraction within standards - Cycloplegic for pilots; manifest for all others;
    g. Intraocular Pressure within standards;
    h. Visual Acuity within standards;
    i. Slit Lamp Examination - showing no haze;
    j. Corneal Topography (post-operative) - reported by eye surgeon as "acceptable";
    k. Low-Contrast Sensitivity Testing (must pass 20/60 or better) using one of the following:
        1) Precision Vision backlit chart (preferred);
        2) BVAT low contrast acuity (set on 5%);
        3) Bailey-Lovie 10% low contrast acuity test;
        4) Pelli-Robson Contrast Sensitivity Test;
        5) Small Letter Contrast Test;
        6) VisTech or FACT Contrast Sensitivity Test.
5. Quality of Vision Questionnaire:
    a. The Quality of Vision Questionnaire is a tool which assists in identifying some of the common visual deficiencies following a CRS procedure. The member must be free of any post-operative visual complaints per this questionnaire (found on the last page of this appendix - page 47). If an IA is required, the questionnaire should be included in the documentation.
    b. The Quality of Vision Questionnaire and a visual acuity check shall be done every three months for one year after CRS surgery, then annually thereafter. This information is to be reviewed/verified by the FS/AMO/APA, documented in the member's health record, and is an element of the member's quinquennial flight physical.
6. Follow-up:
    a. Quality of Vision Questionnaire and visual acuity check as noted paragraph 5.b. above.
    b. All subsequent quinquennial flight physicals must include an optometry or ophthalmology consult to include a Slit Lamp Examination of the cornea, manifest refraction, corrected visual acuity, and a 5% Low Contrast Sensitivity Test.

Quality of Vision Questionnaire

For aviation duty following corneal refractive surgery (CRS):

Read the questions carefully and answer truthfully. Concealment of medical history shall be reported to higher authority and may potentially result in permanent disqualification. Each positive response for items 1-4 or negative response to item 5 requires elaboration by a FS/AMO/APA or eye care provider. If symptoms are corrected by spectacle wear, note this and record the prescription used. Clearance for flight duty or EDP/IA recommendation for aviation duty after CRS requires compliance with the appropriate visual standards AND freedom from significant visual symptoms. If these standards are achieved only with corrective eyewear, then updated spectacles shall be worn for all aviation duty.

1. When you read brightly illuminated road signs at night, do you have any problems with hazy vision?
   YES ☐ NO☐
2. Do you have any problems with glare or halos from oncoming headlights at night?
   YES ☐ NO☐
3. Do you have any problems seeing because of double vision or ghost images?
   YES ☐ NO☐
4. Do you have any problems seeing people or things at twilight?
   YES ☐ NO☐
5. Do you have confidence in your visual ability to perform your aviation duty?
   YES ☐ NO☐

Respondent's Signature: **_____** ***Date:*** **_____**

Provider Comment: **_____**

_____

_____

_____

_____

Provider signature and identification:

_____ **_____**

Signature ***Identification***

RESPONDENT IDENTIFICATION:

Last Name _____ First _____ M.I. _____

SSN _____

APPENDIX E

Pregnancy in Aviation

1. **Aeromedical concerns:**

   a. The normal physiologic changes that occur during pregnancy and the potential for pregnancy to exacerbate pre-existing medical conditions can place a pregnant aviator at risk in the aviation environment. Although rare, the potential exists for sudden incapacitation or life-threatening emergencies and obvious compromise to flight safety. Therefore, pregnancy is considered potentially disqualifying for aviation duties.

   b. No study has demonstrated adverse effects on a developing human fetus in the aviation environment but there is a theoretical possibility and some cautionary data from other environments that may be transferable. It is possible that flying while pregnant could endanger the health of the aviator or her developing fetus. Though the cumulative increased risk is believed to be small, there is no question that a pregnant aviator has a higher risk for medical complications than if she were not pregnant. These concerns make the decision to continue flight duties while pregnant a complex risk management process with the increase in risk dependent upon the overall health of the aviator and the stage of pregnancy.

   c. Specific conditions that may occur during pregnancy that could complicate operating in the aviation environment include, but are not limited to:

      - Hemorrhage due to ectopic pregnancy, miscarriage or placental abruption;
      - Deep vein thrombosis and pulmonary embolus;
      - Dizziness/transient loss of consciousness due to hypotension, dehydration, and diminished vasomotor tone;
      - Heat intolerance and the heat related risks of neural tube defects and preterm labor;
      - Pregnancy induced vision changes;
      - Distraction/ loss of mental alertness from morning sickness, sleep disturbance, contractions, lower abdominal discomfort, increased urinary frequency, and gastro esophageal reflux;
      - Physical limitations due to back pain, changes in abdominal girth, and altered center of gravity;
      - Edema related musculoskeletal conditions;
      - Severe hypertensive states including eclampsia and pre-eclampsia;
      - Gestational diabetes;
      - Abnormal fetal development due to noise and vibration exposure.

2. **Timing of Medical Clearance:**

   a. Initial applicants (all classes) will not be considered for medical clearance until fully recovered (6 weeks postpartum). Written recommendation and clearance for flight duty by the treating obstetrician and concurrence by the FS/AMO is required.

   b. Rated aviators (all classes) will not be considered for medical clearance until there is ultrasound verification of a healthy pregnancy. Until that time, aviators should be restricted from aerial flights but may continue to perform ground run-up duties and to train in flight simulators. An aviator may not be aware that she is pregnant for some early portion of their pregnancy but should report to the FS/AMO/APA for evaluation as soon as possible.

3. **Restrictions:**

   a. Pilots: Once there is verification of a healthy, single fetus within the uterus, pregnant aviators may be authorized to participate in aerial flights through 27 weeks gestation provided all of the following conditions are met. (Note: multiple pregnancies, by definition, are complicated pregnancies and will not

be medically cleared for flight duties.)

1) Aerial flights are restricted to dual pilot aircraft with ambient or pressurized cabin pressures that remain below 10,000 feet ASL;

2) The other pilot must be fully qualified to operate the aircraft;

3) Aviation physiology training is current and will not lapse during the clearance interval. The pregnant aviator shall not participate in water survival related training (swim, SWET, dunker, etc.);

4) The pregnant aviator has no pre-existing medical conditions which might affect the pregnancy;

5) The aviator indicates a desire to resume aerial flights after having read and signed the "*Information to the Aviator Requesting to Continue Flying While Pregnant*" form (see pages 53-56 below);

6) The aviator has read and signed the "*Obstetrical Recommendation for Resuming Aviation Duty While Pregnant*‟ form (see pages 57 below);

7) The aviator's obstetrician has signed the "Obstetrical Recommendation for Resuming Aviation Duty While Pregnant‟ form recommending continued aerial flights; and reviewed at each prenatal visit and valid through week 27.

The aviator's FS/AMO recommends resumption of aerial flights through the 27th week and initiates an Eligibility Determination Process (EDP) or Individualized Assessment (IA);The AOC Commanding Officer has approved the medical clearance recommendation.

b. Aircrew: The medical clearance process for aircrew is the same as with pilots with the following exceptions:

1) While it is believed that exposure to solvents and fuels during aircraft refueling, washing, and maintenance does not represent a known direct hazard to the mother or the fetus, the issue has not been fully evaluated. As such, it is not recommended that pregnant aircrew participate in these activities.

2) To evaluate potential hazards within the workplace, a *Risk Assessment for Pregnant Employees* is included on pages 58-62 of this appendix. This generic assessment tool is utilized to identify issues and allow for the elimination or mitigation of risk.

4. **Approval:**

a. Return to flight duties requires completion of the EDP or IA process.

b. The Commanding Officer has ultimate responsibility for the safety of all personnel and may disallow continued flight of pregnant aviators regardless of the EDP or IA disposition.

5. **Follow-up:** While in a medically cleared flight status the pregnant aviator will meet with her FS/AMO/APA at a minimum of every two weeks. These visits will confirm:

a. Obstetric care is ongoing and meets the aviator's needs;

b. There are no collateral problems or pregnancy complications;

c. Obstetric monitoring of blood pressure, serum glucose, and urinalysis are all normal;

d. Visual acuity remains at the pre-pregnancy baseline. Any change in visual acuity from baseline will terminate medical clearance for the duration of the pregnancy;

e. The pregnancy does not compromise flight safety or impede emergency egress;

f. The aviator desires to continue in a flight status.

6. **Medications:** Prenatal vitamins, FeSO4, and folic acid are permissible. Medications for morning sickness are not permitted due to sedative side effects.

DISCUSSION

1. Potential Risks:

   a. Complicated Pregnancy: A pregnancy may be considered complicated by problems intrinsic to the pregnancy such as multiple gestation, poly/oligohydramnios, placenta previa, gestational thrombocytopenia/anemia, pre-eclampsia/eclampsia and gestational diabetes. Extrinsic problems such as clotting disorders, high blood pressure, and orthopedic conditions may also complicate pregnancy. If the obstetrician or the flight surgeon has concerns that there are any complications of pregnancy, the aviator should not be recommended for aerial flights.

   b. First Trimester: The risk from ectopic pregnancy and miscarriage in the first trimester requires that pregnant aviators avoid aerial flights until an ultrasound can confirm a healthy pregnancy.

   c. Third Trimester: After 28 weeks, decreased mobility can interfere with the ability to carry out required tasks and impede emergency egress. The onset of labor increases throughout the third trimester. Therefore, the medical clearance period of authorized aerial flights shall terminate at 28 weeks gestation.

   d. Due to the increased radiation exposure experienced at levels above FAA guidelines for permissible exposures during pregnancy, no pregnant member shall participate in storm reconnaissance flights.

2. Delineation of Potential Risk:

   It is essential that the pregnant aviator, the attending obstetrician, the unit AMO, and the Commanding Officer are all aware of the risks associated with aerial flights during pregnancy. Specific risks include, but are not limited to:

   a. Hemorrhage due to ectopic pregnancy, miscarriage or placental abruption: Bleeding during pregnancy can be sudden and profound. It is frequently associated with severe abdominal pain and may result in sudden incapacitation.

   b. Ectopic Pregnancy: Restricting aerial flights in the first trimester until an ultrasound confirms a healthy fetus in the uterus effectively screens for ectopic pregnancy.

   c. Miscarriage: Majority occur in the first trimester.

   d. Placental Abruption: The risk is highest between 24 and 26 weeks gestation.

   e. Deep vein thrombosis (DVT) and pulmonary embolus (PE): Pregnancy results in the presence of all three components of Virchow's triad: venous stasis, endothelial injury, and a hypercoagulable state. Contributing factors include dehydration and periods of inactivity (both are factors associated with the aviation environment). DVT can lead to PE which may cause sudden incapacitation or death.

   f. Dizziness/transient loss of consciousness due to hypotension, dehydration, and diminished vasomotor reflex tone: Pregnancy produces an increase in urine production. Morning sickness and a desire to reduce urinary frequency commonly lead to dehydration. Dehydration results in low blood pressure which may compromise blood flow to maternal and fetal tissue. Additionally, beginning in the second trimester, compression on the pelvic veins and a reduction in vasomotor tone also lower maternal blood pressure. In the mother, this reduction in blood flow may lead to reduced G-tolerance, lightheadedness, dizziness, visual disturbances, and loss of consciousness, Adverse consequences for the fetus include oligohydramnios, developmental delay, and preterm labor. Pregnant aviators should be vigilant in maintaining good hydration but this may lead to urinary distention and consequent mental distraction during aerial flights.

   g. Heat intolerance and the heat related risks of neural tube defects and preterm labor: Pregnancy associated increase in BMI coupled with increased heat production from the developing fetus result in a loss of heat tolerance in the pregnant aviator. Safety equipment such as dry suits and operating in hot environments may pose risks to both the aviator and the fetus. There is evidence that even brief elevation in core body temperature more than doubles the risk for neural tube defects in the developing fetus. Additionally, exposing pregnant women to high ambient heat environments significantly increases the risk for preterm labor. Pregnant aviators who would be required to wear dry suits and/or operate in hot environments should refrain from aerial flights.

h. Pregnancy induced vision changes: There are common physiologic changes in the eye of pregnant women that may cause unpredictable, transient changes in visual acuity. Pending further study, pregnant aviators should be sensitive to any subjective changes in their vision and report immediately to their FS/AMO/APA. While medical clearance to perform aerial flights is in effect, pregnant aviators shall have their visual acuity checked at least every two weeks.

i. Distraction, loss of mental alertness from morning sickness, sleep disturbance, contractions, lower abdominal discomfort, increased urinary frequency, and gastro esophageal reflux: Alone or in combination, these conditions might lead to distraction and a loss of situational awareness. For this reason, pregnant aviators who have been medically cleared to fly should feel comfortable and empowered to self-ground. This is one important reason for frequent follow up with the FS/AMO/APA and every effort should be made by the medical officer and the command to cultivate an environment that would facilitate this process.

j. Abnormal fetal development due to noise and vibration exposure: While definitive research in humans is limited, there is some evidence suggesting exposure to high levels of noise and vibration may adversely impact the developing fetus. The organs responsible for hearing in humans develop by 24 weeks gestation, and research has shown noise and vibration may damage these developing organs. Furthermore, other studies have suggested noise exposure may contribute to growth restriction and preterm labor.

k. Abnormal fetal development due to radiation exposure: Increased radiation exposures occurring at elevations experienced during the overflight of hurricane reconnaissance are above the permissible levels of exposure during pregnancy. Such exposures are known to cause abnormal fetal development or fetal demise,

3. Contraindications for Flight:

a. Solo flights - in the unlikely event of sudden incapacitation, there should be another fully qualified pilot able to safely land the aircraft;

b. Flights in ejection seat aircraft; and

c. Flights with risk for hypoxia or excessive G-force exposures.

d. Flights in aircraft which require maneuvering above or through hurricanes, due to unacceptable exposure to excessive vibration and increased radiation.

Information to the Aviator Requesting to Continue Flying While Pregnant

(This information sheet requires aviator acknowledgment).

Pregnancy is a normal female condition resulting in various important physiologic changes. These dynamic changes accommodate the developing fetus and prepare for delivery. The overall impact of these changes is unpredictable and varies between different patients and pregnancies. Many of the normal physiologic changes of pregnancy create potential risks in the aviation environment. In addition to the risks from a normal pregnancy, there are certain specific disorders that can cause sudden incapacitation or life-threatening emergencies. Furthermore, pregnancy can exacerbate other chronic medical problems. These issues present unique risks to the pregnant aviator who continues to fly. Aviators with complicated pregnancies, or certain pre-existing medical conditions (other medical waivers), should not fly while pregnant. Pregnant aviators should not fly during high risk times in the pregnancy, such as the first and third trimester. Solo flights, flights in ejection seat aircraft, and flights with risk for hypoxia or excessive G-force exposures should be avoided during pregnancy. It is essential for the pregnant aviator to discuss potential adverse consequences of the aviation environment with her flight surgeon and obstetrical care provider. Only after careful consideration should she request a waiver to continue flying during her pregnancy. Some of the common physiologic changes in pregnancy and potential hazards are described below.

1. **Changes in Blood:**

   Blood volume in a pregnant patient increases in order to adequately perfuse the growing uterus and fetal tissues. The increased blood volume is a result of an increase in plasma, the watery portion of the blood. This dilutes the oxygen carrying red cells, causing a physiologic anemia. Increased iron requirements in pregnancy may further complicate anemia. Maternal iron stores are transferred to the fetus, requiring iron replacement during pregnancy. Physiologic and/or iron deficiency anemia can impair aviator performance and adversely impact flight safety. Therefore, prior to returning to flight status, a blood test is required to assess blood levels and rule out anemia.

2. **Dehydration:**

   It is important for aviators to remain well hydrated. Pregnancy produces an increase in urine production, commonly contributes to dehydration that may be challenging to correct. Dehydration results in lower blood pressure, which may cause reduced G-tolerance, lightheadedness, dizziness, visual disturbances, loss of consciousness, or adverse consequences for the fetus. Lower blood pressure compromises blood flow to maternal and fetal tissue. This is a dynamic process requiring an aviator's constant vigilance to maintain a well hydrated status.

3. **Blood Sugar:**

   Pregnancy hormones affect a pregnant woman's blood sugar control, resulting in higher blood sugar levels than in non-pregnant women. Elevated blood sugar can be harmful to both the pregnant woman and her fetus, and can increase flight-related risks for dehydration, spatial disorientation, and G-force intolerance. The changes and impacts of blood sugar metabolism in pregnancy vary considerably. Therefore, blood sugar measurements should be performed regularly (at least every two weeks) in aviators who continue to fly while pregnant.

4. **Hypotension (low blood pressure) & Syncope (fainting):**

   Pregnant women generally experience lower blood pressures. This is due in part to dehydration, but mainly as a result of hormonal effects on blood vessel relaxation. The general relaxation of smooth muscles in blood vessel walls lowers the baseline blood pressure and reduces the vascular system's ability to compensate for G-forces that "pull" blood from the brain. Additionally, about 25% of blood flow is directed to the uterus and placenta, which is a very low pressure system assuring constant blood flow to the fetus. The diversion of blood into the low pressure system further decreases systemic blood pressure, decreases G-tolerance, and increases the risk of grey-out, black-out, and syncope. Syncope is a transient loss of consciousness due to decreased blood flow to the brain, and usually resolves without lasting effects once blood flow is restored. It is important for the pregnant aviator to understand these changes may vary throughout pregnancy and modify her ability to anticipate, recognize, and counter G-induced grey-out, black-out, or syncope.

5. **Lungs:**

   Changes occurring in the lungs during pregnancy are aeromedically relevant. More fluid collects in the lungs of a pregnant woman resulting in functional changes. The most significant change results in a dramatic reduction in the residual lung volume, which functions as the lung's emergency oxygen reserve and greatly reduces the time a woman can tolerate breath holding. This can result in an impaired tolerance to any exposure to hypoxia such as underwater egress training or in an emergency.

6. **Hypoxia:**

   As mentioned above, a pregnant aviator will have an impaired tolerance to hypoxia. Hypoxia may potentially cause fetal malformation, spontaneous abortion, or developmental disorders. The hemoglobin in the fetal blood, however, has a much higher affinity for oxygen than the mother's hemoglobin. This preferentially oxygenates the fetal blood providing some level of protection. It is unclear how susceptible the fetus may be during transient hypoxia exposures. It is widely believed adequate fetal oxygenation occurs at altitudes below 10,000 feet. For this reason, pregnant aviators are restricted to flights with cabin pressures less than 10,000 feet.

7. **Vision Changes:**

   Good vision is critical to safe flight. Studies have shown variable and temporary changes in visual acuity during pregnancy. To mitigate any risk related to vision changes during pregnancy, an aviator should have a visual acuity examination prior to returning to flight status, and her vision should be rechecked regularly during the pregnancy (at least every two weeks). A common eye change in pregnancy is corneal edema, which causes a thickening of the cornea by about 3%. This may result in visual changes and intolerance to contact lens use. Pregnant aviators who wear contact lenses may need to switch to glasses.

8. **Vaginal Bleeding:**

   Vaginal bleeding can present in all stages of pregnancy, and occurs in up to 25% of all first trimester pregnancies. It can range from minimal to excessive and life-threatening. It can be gradual and painless, or sudden and associated with incapacitating pain. In most cases, small amounts of vaginal bleeding are not associated with dangerous conditions. However, vaginal bleeding can indicate more serious conditions such as miscarriage, placenta previa, vasa previa, or placental abruption, and must always be immediately evaluated. Miscarriages are common events, with most occurring in the first trimester. Many miscarriages occur unpredictably without identifiable cause. Placenta previa, vasa previa, and placental abruption occur later in pregnancy and can result in sudden life-threatening bleeding. The risk of placenta previa and vasa previa can be mitigated with an ultrasound exam, which is frequently performed in the second trimester. Because vaginal bleeding occurs frequently in the first trimester, and can lead to unpredictable sudden incapacitation, pregnant aviators are frequently restricted from flight in the first trimester.

9. **Ectopic Pregnancy:**

   An ectopic pregnancy occurs when the pregnancy implants and grows in a location outside of its normal position in the uterine cavity. Most ectopic pregnancies occur in the fallopian tube ("tubal pregnancy"). Unlike the uterus, which can expand with the growing fetus, the fallopian tube will stretch, rupture, and result in life-threatening internal bleeding. An ectopic pregnancy is the most common cause of maternal death in the first trimester. Ectopic pregnancies are difficult to predict and diagnose, frequently presenting with an abrupt onset of incapacitating pain and life-threatening bleeding. Because of the ectopic pregnancy risk, pregnant aviators should be grounded, and defer any consideration for returning to flight status until a formal ultrasound confirms the pregnancy is located within the uterus.

10. **Blood Clots:**

    Pregnancy is considered a hypercoagulable state, a condition promoting blood clot formation. The normal chemicals that induce clot formation are hyperactive during pregnancy. The normal physiologic changes in pregnancy include the relaxation of blood vessels, dehydration, and low blood pressure. These changes increase the likelihood that blood will pool, particularly in the lower extremities. Blood pooling promotes blood clot formation. A growing uterus can compress the veins that drain the legs, further increasing the likelihood for blood clots in the lower extremities. Due to these circumstances, blood clots occur four times more frequently in pregnancy. Sitting for prolonged periods of time can also lead to blood clots in the legs.

These clots may break off and travel through veins to the lungs (pulmonary embolism) and become trapped in the vessels within the lungs. This results in severe chest pain and shortness of breath which may be life-threatening and requires immediate treatment. Pulmonary embolism during pregnancy is the leading cause of maternal death in the developed world. Understanding these risks, the pregnant aviator must limit prolonged sitting in a fixed position, and seek immediate medical attention if experiencing chest pain or shortness of breath.

11. **Preeclampsia, High Blood Pressure and Seizure:**

    Preeclampsia is an abnormal condition in pregnancy resulting in very high blood pressure, excessive swelling, abnormal kidney function, severe headaches, vision changes, neurological impairment, and occasionally seizures (eclampsia). Preeclampsia occurs in 3-5% of pregnancies. It generally occurs after the 20th week of pregnancy, and rarely occurs earlier. The evaluation for its presence is a common part of routine pregnancy care. Any signs or symptoms of this condition must result in immediate grounding and prompt evaluation by the obstetric care provider.

12. **Hearing:**

    While definitive research in humans is limited, there is some evidence suggesting exposure to high levels of noise and vibration may adversely impact the developing fetus. The organs responsible for hearing in humans develop by 24 weeks gestation, and research has shown noise and vibration may damage these developing organs. Furthermore, other studies have suggested noise exposure may contribute to growth restriction and preterm labor. The pregnant aviator must understand excessive noise in the aviation environment represents an uncertain risk to her developing fetus.

13. **Chemical Exposure:**

    Although somewhat protected by the uterine environment, the fetus is susceptible to the harmful effects of toxic exposures. This risk is greatest in the first 12 weeks of the pregnancy. Animal studies suggest a number of chemicals can cause birth defects and miscarriage, but definitive studies in humans do not exist. Because a number of potentially toxic chemicals are present in the aviation environment, the pregnant aviator must consider and minimize this uncertain risk.

14. **Physiology Training:**

    Renewal of required physiology training is not authorized during pregnancy. If any qualification expires, the member must be grounded for the duration of the pregnancy.

15. **Aviation Training:**

    Initial Aviation training as a Student Naval Aviator at Flight School is not authorized during pregnancy.

    Many women have continued to fly during pregnancy without evidence of adverse effects. Because of this, it is believed most uncomplicated pregnancies will tolerate the aviation environment when appropriate restrictions and risk management strategies are employed. The pregnant aviator must educate herself with regard to potential hazards and prevention when flying while pregnant.

I have read and understand the contents of this document. I have discussed this information with my obstetrician and my Flight Surgeon/Aviation Medical officer. My questions have been answered to my satisfaction. I request permission to continue flying through the 27th week of my pregnancy. I understand I am not required to continue to fly while pregnant and I may voluntarily suspend my participation in aerial flights at any time. I will comply with all medical clearance requirements including routine appointments with my Flight Surgeon/Aviation Medical Officer every two weeks for the duration of the medical clearance.

_____ _____

Signature ***Date***

_____

Printed Name

OBSTETRIC RECOMMENDATION FOR RESUMING AVIATION DUTY WHILE PREGNANT

Dear Doctor,

Your patient regularly flies on Department of Commerce/NOAA aircraft. In order to make a determination as to whether or not she should continue to fly while pregnant, the Department of Commerce needs your expert medical opinion.

It is generally accepted that continuing to fly NOAA aircraft through the 27th week of gestation is safe. However, there is potential for exposure to certain adverse conditions and some of the physiologic and pathologic states associated with pregnancy may interfere with the patient's ability to perform her job safely. We ask that you discuss these issues with your patient.

While every effort is made to mitigate the risk, there are some adverse conditions that the patient may be exposed to during flight operations which include:

- Restricted movement for extended periods (up to 10-hours in P-3D).
- Unavailable toilet facilities (except P-3D).
- High heat and humidity exposure from wearing personal protective equipment (dry suits) and high ambient temperatures in the aircraft.
- Sleep disruption/deprivation from watch-standing duties and protracted missions.

A pregnant aviator may be recommended to continue flying through the 27th week of gestation provided the following conditions are met:

- There are no suspected or anticipated pregnancy related complications
- The aviator expresses a desire to remain in a flight status while pregnant.

  Note: Any hesitancy demonstrated by the patient should result in suspension of flight duties.

For the Obstetrician:

☐ There are no known mental or physical conditions related to pregnancy that would pose a significant risk from continued participation in aerial flights. I support this patient's request to continue participation in aerial flights through the 27th week of gestation.

☐ There are complications with this pregnancy that make continued participation in aerial flights ill-advised and I do not recommend it.

_____ _____

Obstetrician Signature ***Date***

_____

Printed Name

For the Patient:

I have discussed the risks and uncertainties relative to flying while pregnant with my obstetrician. My questions have been answered to my satisfaction. I request permission to continue flying through the 27th week of my pregnancy. I understand I am not required to continue to fly while pregnant and I may voluntarily suspend my participation in aerial flights at any time.

_____ _____

Patient Signature ***Date***

_____

Printed Name

Risk Assessment for Pregnant Employees

Name:	**Due Date:**	**Employee ID:**
Job Title:	**Location:**	
Supervisor:	**Date of Assessment:**	
Assessor's Name:	**Task:**	

The following is a list of hazards that may affect new and expectant mothers. The assessor should complete this form with the expectant mother and indicate if any of these hazards are present in the work environment and provide details documenting what corrective measures, if any, must be taken. If there is a specific problem with the work or its environment, it should be indicated during the assessment.

Note that individual circumstances may change during pregnancy that may alter this risk assessment. If changes occur, a further risk assessment may be required.

	Hazard		
Section 1: The Working Environment	**Yes**	**No**	**Actions/Comments**
Are there space constraints preventing good posture?			
Is it necessary to reach over or around obstacles?			
Are there: Steps?			
Slopes?			
Uneven surfaces?			
Spillages?			
Rubbish or clutter?			
Trip hazards?			
Machine hazards?			
Is the working environment:			
Too hot?			
Too cold?			
Too humid?			
Poorly lit?			
Poor Visibility?			
Poor hygiene?			
Odorous?			
Is protective clothing provided?			
Are rest facilities available?			

	Hazard		
Section 2: Biological Hazards	**Yes**	**No**	**Actions/Comments**
Is there likely exposure to Biological Hazards?			
If No, proceed to Section 3			
Is this in the form of Virus?			
Is this in the form of Bacteria?			
Is this agent included in Risk Groups 2, 3, or 4 of the Biological Agents Regulations?			
Is PPE required/provided?			
Is there possible exposure to:			
Toxoplasma?			
Rubella Virus?			
Is the pregnant employee immunized against these?			
	Hazard		
Section 3: Chemical Agents	**Yes**	**No**	**Actions/Comments**
Does the task involve regular exposure to chemicals?			
If No, proceed to section 4			
Is there exposure to:			
Lead or lead derivatives?			
Carcinogens?			
Mercury/mercury derivatives?			
Antimiotic drugs?			
Carbon Monoxide?			
Are any chemicals listed in the Chemical Agent Regulations?			
Is the MSDS available for each chemical?			
Are there substances labeled :			
R40: possible risk of irreversible affects			
R45: may cause cancer			
R46: may cause heritable genetic damage			
R61: may cause harm to unborn child			
R63: may cause harm to unborn child			
R64: may cause harm to breastfed babies			

Is PPE required/provided?			
	Hazard		
Section 4: Physical Agents	**Yes**	**No**	**Actions/Comments**
Does the task involve regular exposure to shock/vibration?			
If No proceed to Ionizing Radiation			
Sudden Blows?			
Excessive movement?			
Hammer or vibrating tools			
Ionizing Radiation			
Is there exposure to potential source of Ionizing radiation?			
If No, proceed to Non-ionizing Radiation			
Is this in liquid/solid/dust state?			
Are dose limits monitored?			
Are they below statutory limits?			
Is there a possibility of radioactive contamination?			
Non-Ionizing Radiation			
Is there exposure to potential source of Non-ionizing radiation?			
If No, proceed to Noise			
Is there exposure to electromagnetic fields and waves?			
Is there exposure to optical radiation?			
Is there exposure to an excessively noisy environment?			
If No, proceed to Section 5			
Does the noise level exceed 85dB(A)?			
Is noise monitoring carried out?			
Is PPE required/provided?			
Is PPE worn as required?			
Does the PPE meet with EU standards?			
	Hazard		
????	**Yes**	**No**	**Actions/Comments**
Movement and postures			
Does the task involve periods in excess of 1 hour at a time standing or sitting?			
Are chairs provided?			
Movement and postures			
Are anti-fatigue mats available?			
Are work areas restrictive/confined?			
Is there work at heights?			
Visual Display Units (VDU)			
Does the task involve use of a VDU			
If No, proceed to Shift Work			
Has an ergonomic assessment been completed?			
Has the operator been educated in the safe use of VDU's?			
Shift Work			

Does the task involve Night work?			
Are the shift patterns regular?			
Manual Handling			
Does the task involve:			
Repetitive handling?			
Holding the load away from the trunk?			
Twisting/stooping or upward reaching?			
Is there slipping potential?			
If pushing or pulling, are hands above the shoulder or below the waist?			
Is the distance excessive?			
Does the load have to be handled up steps or slopes?			
Are mechanical aids used?			
Are there time restraints?			
Is the weight of the object:			
>11 pounds in the seated position?			
>35 pounds and handled in a working posture other than seated?			
Is the load:			
Bulky and awkward to grip?			
Slippery?			
Unevenly distributed?			
Difficult to grasp?			
Sharp with abrasive edges?			
Hot or cold?			
Likely to shift during handling?			
	Hazard		
Section 5: Employees Comments.	**Yes**	**No**	**Comments**
Are you satisfied with:			
Lighting levels?			
Working temperatures?			
Noise levels?			
Break/Rest periods?			
Rest Facilities?			
Job rotation?			
Are you aware of the following services?			
Occupational Health?			
Health Monitoring?			
First Aid?			
Have you received information and training in your job?			
When did you last receive Manual Handling training?			
Is there a buddy system in place in your area?			
Additional comments or suggestions:			
In the opinion of the assessor, taking into	**Yes**	**No**	

account the factors identified during the assessment, is corrective action required? *If yes, document on attached list (final page).	☐	☐	

Member

_____ _____
Signature *Date*

_____
Printed Name

Member's Supervisor

_____ _____
Signature *Date*

_____
Printed Name

AOC Medical Officer

_____ _____
Signature *Date*

_____
Printed Name

AOC Safety Officer

_____ _____
Signature *Date*

_____
Printed Name

Corrective Action Required

Sec. #	Issue	Control Measures	Date	Person Responsible	Status

Safety Officer

_____ _____

Signature *Date*

_____

Printed Name

UNITED STATES DEPARTMENT OF COMMERCE
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AOC AMO 27 Feb, 2017

MEMORANDUM FOR Record

SUBJECT: Pregnancy risks associated with hurricane flights

Background: NOAA's AOC is involved in scientific missions requiring flights in conditions falling far outside standard aviation parameters. These missions evolve over time with improvements in the quality of research and the resultant data. With improved data also comes improved understanding of the medical risks and exposures associated with particular missions. As the flight surgeon tasked with review of the medical standards for NOAA aviators, it is necessary to document the medical decision making process which predicates two new restrictions for pregnant aviators involved in certain storm reconnaissance/surveillance missions, and specifically hurricane flights.

1. NOAA Medical Manual (MEDMAN) Section R 24 d. states "Due to increased exposure to radiation at higher altitudes experienced during hurricane conditions, no pregnant member shall participate in over flights of hurricanes.

   a. The Federal Aviation Association (FAA) Advisory Circular (AC) No. 120-61B, dated 11/21/2014, subject: In-Flight Radiation Exposure, has noted the acceptable levels for radiation exposure. Aviators have an acceptable exposure of an average of 20 milliSieverts (mSv) per year averaged over five years. Pregnant females fall under much more stringent oversight and have a maximum radiation exposure threshold at 0.5mSv in any given month.

   b. US Coast Guard (USCG) COMMANDANT INSTRUCTION (COMDINST) 1000.9 dated 29 Sep 2011, page 4, Environmental Restrictions letter (e) states: "Ionizing radiation not to exceed 0.5 rem (0.005 Sievert) during the entire gestation period. Efforts should be made to avoid substantial variation above the uniform monthly exposure rate that would satisfy this limiting value…"

   c. Radiation exposure data recordings were taken in 2015 during multiple NOAA flights into Hurricane Danny. These measurements were taken with dosimeter instrumentation that was temporarily installed for those specific flights. Measurements demonstrated significantly higher radiation exposures than the comparison rates noted in AC 120-61B for routine aviation exposures during commercial flights. (Data recordings from eight flights over Hurricane Danny follow this memo.)

   d. Rough calculations made from this data indicate that a standard radiation threshold limit of 20mSv/yr could be reached in 568 flight hours if flown though similar conditions. However the 0.5mSv threshold applied to pregnant aviators by the FAA could potentially be reached after an eight

to ten hour exposure. The variability and predictability of potential exposures has not been well studied, but the recordings reflect higher radiation readings during intense storm activity. Mission sets, currently completed by the NOAA GIV for overflight of hurricanes, would potentially incur exposures beyond acceptable limits for pregnant aviators during a single flight.

e. Due to expected radiation exposures above the acceptable standards for fetal exposure, NOAA Medical Manual (MEDMAN) Section R 24 d. has been included in the 2017 MEDMAN revision.

2. MEDMAN Section R 24 e. states: "Due to expected, increased-turbulence exposures during flights through forming and formed hurricanes, no pregnant member shall participate in flights intended to encounter those conditions.

a. As hurricane flight conditions are not available to aviators within civilian aviation, the FAA does not have associated restrictions for pregnant aviators. However, precedents are in place in military medicine which more appropriately replicate the conditions of storm reconnaissance.

- USCG COMDINST 1000.9 directs medical providers and commanders to place duty restrictions on pregnant Service Members (SM) in situations of expected environmental hazards. This same instruction, page 9, #2 a., notes concerns with evacuation times for obstetric emergencies during deployable operations stating: "in addition, a pregnant service member shall not remain aboard a cutter if the time for medical evacuation of the member to a treatment facility capable of evaluation and stabilizing obstetric emergencies is greater than three hours." While this specifically references cutters, the same evacuation limitations occur during hurricane flights.

- Army Regulation (AR) 40-501, chapter 7-9, d. (6) states "The Soldier should avoid excessive vibrations. Excessive vibrations occur in larger ground vehicles (greater than 1 ¼ ton) when the vehicle is driven on unpaved surfaces." Having experienced the stated Army conditions and the turbulence associated with tropical storms/ hurricane flights, it is appreciated that both require a similar exposure to vibration and physical jolts. Further exacerbating this for NOAA aviators are the occasional rapid pressure fluctuations, commonly ranging from + 2 to -1 gravitational constant units (G's), at times recorded as high as +3.5 and -2.5 G's.

b. Due to known vibratory/shock exposures associated with increased fetal demise, and emergency evacuation times expected to exceed three hours, NOAA MEDMAN Section R 24 e. has been included in the 2017 MEDMAN revision.

Any questions related to this memorandum may be directed to the undersigned, or in his absence addressed through the office of CDR Christian Rathke, Director of Health Services at (757) 441-6463.

Paul Hoffman FS, PA-C
LCDR, US Public Health Service
Director of Aviation Health Services

APPENDIX F

Medication Use in Aviation Personnel

1. Aeromedical Concerns: Aviation personnel should be evaluated for the potential restriction from flying duties when initiating any medication and should also be advised of potential side effects. When using a medication, the following should be considered:

   a. Ensure the medication and the underlying medical condition are compatible with aviation duty;

   b. Ensure the medication is effective and essential to treatment;

   c. Ensure the aviator is free of aeromedically significant side effects after a reasonable observation period. First time usage of any medication requires a 24-hour grounding period (auto-up) to ensure the member is free of significant side effects. Subsequent use does not require grounding if the medication has been tolerated without significant side effects.

2. The Director, Office of Health Services, has reviewed and concurs with the classification of a wide range of medications for use in the aviation environment. Medications are designated as Class 1, 2, 3 and 4 (see paragraph 4 below). Each class defines any restrictions required for aviation personnel using that medication per the U.S. Army Aeromedical Policy Letters (APL) and the Official Air Force Aerospace Medicine Approved Medications list (references 12 - 13, Section D: *Authority*).

   Due to the expanding number of pharmaceuticals in the marketplace and the dynamic nature of their approval/prohibition for use in aviation, a comprehensive list of approved/prohibited medications would be impractical (if not impossible) to list here. The FS/AMO/APA should consult the above listed references for specific guidance. Both references are available on-line and are updated regularly by their governing agencies.

3. Follow-Up: Appropriate follow-up is dependent upon the specific medication and the underlying medical condition. These requirements are delineated under the specific reference to the applicable medication or medical condition.

4. Medication Classes:

   a. Class 1: Over-the-counter (OTC) medications that are approved for treatment of acute non-disqualifying conditions and do not require an EDP or IA. Occasional and infrequent use of OTC medications does not pose a risk to aviation safety, but should be used under the guidance of an FS/AMO/APA. In the event an FS/AMO/APA is unavailable, self-use of these medications does not violate the intent of this manual provided the aviator is familiar the indications for usage, proper dosing, and potential side-effects of the particular medication. Their use shall be in accordance with standard prescribing practices. Certain underlying conditions treated with Class 1 medications may require an EDP or IA.

   b. Class 2: These medications usually require a prescription and are authorized for short-term or chronic use under the supervision of a FS/AMO/APA without an EDP or IA. Certain underlying conditions treated with Class 2 medications may require an EDP or IA. These medications shall be noted on the Flight Physical as "Information Only" with an FS/AMO/APA comment on usage and dosage.

   c. Class 3: These medications require a prescription and may, on a case-by-case basis, require an EDP or IA recommendation for long-term use to treat/control certain chronic conditions. The underlying condition may also require an EDP or IA.

   d. Class 4: Use of these medications is considered disqualifying for flight duties and requires grounding of aviation personnel during short-term use. Typically, an EDP or IA supporting their chronic use is not recommended. These medications are considered hazardous for use on flying duty and certain medications in this class may be prohibited for use at any time. Any medication or nutritional/dietary/herbal supplement not listed in the reference policies (references 12 -13, Section D: *Authority*) is considered Class 4 until determined otherwise.

5. Discussion: Medication side effects are difficult to predict and may present differently in any given population group. The side effects relating to CNS, cardiovascular, ophthalmologic, and labyrinthine systems are understandably the most troubling in aviation personnel. Other considerations include the physiologic stressors unique to the aviation environment (i.e., G-forces, hypoxia, barometric changes, heat, cold, vibration, and fatigue) and how these may impact the medication or the underlying medical condition. Additionally, medications and/or herbal/nutritional/dietary supplements may individually not be potentially disqualifying, but when used in combination are unacceptable due to potentiating or synergistic effects. It is imperative that the FS/AMO/APA become familiar with the interactions of any multiple medications/supplements that aviation personnel may be using.

6. Authorized Use of Anti-Motion Sickness Agents

   a. Anti-motion sickness agents are Class 4 medications. The use of these medications is considered disqualifying for flight duties and requires grounding of aviation personnel during short-term use. Typically, an EDP or IA supporting their chronic use is not recommended. Currently, the only exception to the anti-motion sickness agent policy is for those aviators involved in the operation of portable Unmanned Aircraft Systems (UAS)(e.g., PUMA and Quadcopter) who are required to deploy for short periods of time onboard small ships and boats. The potential side effects of prophylactic medication (and their theoretical risk to personnel and the mission) are far less than the incapacitating effects of motion sickness. As such, the use of anti-motion sickness medications is authorized for these personnel when required to operate UAS systems under these conditions.

   b. Treatment: The prophylaxis of choice is the anticholinergic medication scopolamine. This drug is conveniently available in a 1.5mg transdermal patch. Scopolamine, as with all anti-motion sickness medications, is much more effective as a prophylaxis for symptoms rather than a treatment.

   c. Tolerance: Most subjects tolerate the medication well with few significant side effects. Those members with a particular sensitivity to the medication should be placed on a daily oral medication (e.g.; dimenhydrinate). Prior to deployment, each operator shall have successfully completed a trial of the medication to determine tolerance.

APPENDIX G

Working Conditions

1. Aircrew personnel must perform duties that are dangerous and physically demanding under conditions that may be arduous, hazardous, and life threatening. These duties, which require physical ability, stamina, judgment, and constant awareness of potential dangers, include working, walking, climbing stairs and ladders under adverse conditions, and lifting weights up to 50 pounds or more in confined areas. In case of an in-flight emergency, they must be able to fight and control an on-board fire, deploy life-support equipment, including life rafts in heavy seas, and administer emergency first aid.
2. These duties, and the conditions under which performed, require aircrew personnel to maintain a good overall health status and a high level of fitness and mental alertness. The following various environmental factors and working conditions apply to these positions:
    a. Aircrew personnel work irregular hours including prolonged or nontraditional shifts. They may be exposed to the hazards of flying in extreme meteorological conditions, including hurricanes with severe turbulence, and long over-water flights. Aircrew personnel may be deployed for extended periods of time in remote areas away from medical facilities and with standards of care below what is expected in the United States.
    b. Assignments involve adverse working conditions including exposure to adverse environmental and climatic conditions such as extreme heat or cold, high winds, areas with high humidity/dampness, and rapid change of temperatures extremes. Lighting conditions are variable requiring aircrew personnel to work under changing indoor and outdoor environments, such as at night, under flood lights, and in fog or other poor visibility conditions. Aircrew personnel must have the physical stamina to be able to work in unpressurized aircraft up to an altitude that normally requires the use of supplemental oxygen. They may be exposed to weapons, pyrotechnic material, explosives, potentially toxic agents, including but not limited to vapors, liquids, smoke, fumes, and gasses. Aircrew personnel are exposed to excessive noise on a routine basis.
    c. Assignments may be aboard ships during high sea conditions, aboard aircraft such as helicopters, or in desolate, remote, or rural geographic areas or foreign countries. These conditions require the ability to navigate on slippery or uneven surfaces, climb ladders or scaffolding, and work for extended periods in remote areas. They may also be exposed to infectious diseases such as Malaria, Hepatitis A, or Lyme disease.
3. Specific situations may require aircrew personnel to:
    a. Analyze data requiring the ability to integrate complex and conflicting facts to make decisions or determinations based on those facts;
    b. Identify from the aircraft, signals/objects from a distances at night or in adverse weather.

APPENDIX H

Task Analysis for Special Aircrew Duties

	TASK	GROUPS AFFECTED*
1	Lift weights in excess of 59 pounds in confined areas.	All
2	Climb steep ladders.	All
3	Sit for extended periods.	All
4	Negotiate slippery decks in high-sea states.	when assigned to shipboard duties
5	Movement in aircraft during turbulence.	All
6	Stand for extended periods of time.	All
7	Work on aircraft in heights up to 30 feet while the aircraft is on the ground.	A, C
8	Possess constitution to withstand violent aircraft maneuvers.	All
9	Work irregular shifts.	All
10	Possess hand-eye coordination to function in severe turbulence.	All
11	Ability to work outside in extreme cold weather for extended periods of time.	C
12	Ability to work outside in extreme heat and humidity for extended periods of time.	C
13	Ability to work in inclement conditions including rain, snow, cold, heat, and humidity.	All
14	Ability to work in areas of poor lighting conditions.	All
15	Ability to work in areas of high noise using personal protective equipment.	All
16	Ability to work in environment of reduced oxygen, partial pressure up to 10,000 feet in pressurized and unpressurized aircraft.	All
17	Have no physical defect that would prohibit periodic training in an altitude pressure chamber up to 24,500 feet altitude.	All
18	Possess uncorrected or have corrected vision that allows for recognition of potential hazards in moving aircraft.	All
19	Possess color vision capable of distinguishing aviation red and green colors.	All
20	Possess hearing capable of distinguishing normal voice communication and emergency signals in a high-noise environment.	All
21	Possess sufficient strength to deploy life-support equipment with weights up to 100 pounds.	All
22	Possess sensory perception to recognize in-flight emergency conditions within the work area.	All
23	Possess ability to provide first aid under adverse flight conditions.	All
24	Possess satisfactory constitution that allows for completion of periodic water survival training.	All

	TASK	GROUPS AFFECTED*
25	Possess ability to don and inflate personal flotation devices.	All
26	Possess ability to swim, using personal flotation devices.	All
27	Possess ability to deploy and inflate individual and crew life rafts.	All
28	Possess ability to enter and egress individual and crew life rafts.	All
29	Possess ability to use signaling pyrotechnic equipment.	All
30	Possess ability to use firearms for self-defense.	All in-Alaska deployment
31	Possess ability to use supplemental oxygen and self-contained breathing apparatus equipment under conditions of reduced oxygen.	All
32	Possess ability to use full-face mask breathing equipment under conditions of smoke, fire, or hazardous gas presence.	All
33	Possess ability to fight an in-flight fire under emergency conditions.	All
34	Be physically able to tolerate deployment to remote areas where medical care is unavailable, or the standard of medical care is less than what is expected in the United States.	All
35	Possess constitution to tolerate long over water flights outside normal aviation routes for periods of 10 to 12 hours, where the closest accessible facility may be up to 5 hours away.	All

***All = C + A** **C = aircraft maintainers** **A = flight crew**

APPENDIX I

Physical Abilities Required for Special Aircrew Tasks

PHYSICAL ABILITIES	TASKS INVOLVED
Lifting in excess of 50 pounds	1, 21, 24, 27, 28, 33
Carrying in excess of 50 pounds	1, 21, 24, 27, 31, 33
Climbing	2, 4, 7, 24
Standing	2, 6, 7, 21, 24, 30, 33
Use of fingers	1, 2, 4, 7, 10, 15, 21, 23, 24, 25, 27, 29, 30, 31, 33
Walking	2, 5, 6, 23, 30, 33
Reaching above shoulders	2, 4, 7, 21, 24, 25, 27, 28, 29
Pulling hand over hand	2, 24, 26, 27, 28
Use of respirator, breathing apparatus	17, 31, 32, 33
Breathing in reduced oxygen environment	16, 17
Swimming with use of flotation devices	24, 25
Tolerance to heat	12
Tolerance to cold	13
Normal hearing	15, 20, 22, 23
Normal eyesight	18, 19, 22, 30, 33
Ability to work in confined spaces	3, 5, 16, 17, 33, 35
Ability to withstand severe motion	8, 10
Ability to work at heights	2, 7

APPENDIX J

FAA Medical Certificates: Period of Validity

1. **Class 1 (6 - 12 months):** A first-class airman medical certificate is required to exercise the privileges of a civilian airline transport pilot.

   a. A first-class medical certificate is valid for the remainder of the month of issue plus:

      1) 6 calendar months for operations requiring a first-class medical certificate if the airman is age **40 or over** on or before the date of the examination, or

      2) 12-calendar months for operations requiring a first-class medical certificate if the airman has **not reached age 40** on or before the date of examination, or

   b. If reverting from first-class to a lower class:

      1) 12 calendar months for operations requiring a second-class medical certificate, or

      2) 24 calendar months for operations requiring a third-class medical certificate if the airman is **age 40 or over** on or before the date of the examination, or

      3) 60 calendar months for operations requiring a third-class medical certificate if the airman has **not reached age 40** on or before the date of examination.

2. **Class 2 (12 months):** A second-class airman medical certificate is required for commercial, non-airline duties (e.g., for crop dusters, corporate pilots). Those exercising the privileges of a flight engineer certificate, a flight navigator certificate, or acting as air traffic control tower operator must hold a second-class airman medical certificate.

   a. A second-class medical certificate is valid for the remainder of the month of issue plus:

      - 12 calendar months for operations requiring a second-class medical certificate, or

   b. If reverting from second-class to lower class:

      1) 24 calendar months for operations requiring a third-class medical certificate, if the airman is **age 40 or over** on or before the date of the examination, or

      2) 60 calendar months for operations requiring a third-class medical certificate if the airman has **not reached age 40** on or before the date of examination.

3. **Class 3 (24-60 months):** A third-class airman medical certificate is required to exercise the privileges of a private pilot certificate, recreational pilot certificate, a flight instructor certificate, or a student pilot certificate.

   - A third-class medical certificate is valid for the remainder of the month of issue plus:

      - 24 calendar months for operations requiring a third-class medical certificate, if the airman is **age 40 or over** on or before the date of the examination, or

      - 60 calendar months for operations requiring a third class medical certificate if the airman has **not reached age 40** on or before the date of examination.

Record of Changes/Revisions

This policy is a living document that is modified to reflect changes in Federal policy and/or organizational strategic goals and objectives. Modifications made to this document are recorded in the Change/Revision Record below. Only the changes from the current and most recent version are required.

Change / Revision Record			
Version No.	**Date**	**Section**	**DESCRIPTION OF CHANGE**
2.0	05 SEP 2018	All	Major Revisions: 1) Alignment with DOD and CG standards for military flight physicals. No longer require FAA medical certification for NOAA Commissioned Corps Aviators. 2) Alignment with DOD and CG standards for periodicity of physical exams. 3) Authorizes the AMO to discretionarily perform flight physicals for NOAA civilians in lieu of any class FAA medical certification, if requested by the aviator and agreed upon by the AMO. 4) Incorporates CPC SOP "NOAA CORPS ELIGIBILITY DETERMINATION PROCESS FOR AVIATION AND DIVE ACTIVITIES". 5) Standardized flight physical names and descriptions for improved clarity. 6) Includes "Official Air Force Aerospace Medicine Approved Medications" list as an appropriate resource for medical decision making purposes.
2.0	05 SEP 2018	Section B, 1.	Medical Manual review periodicity changed from triennially to biennially to maintain standardization with AOC policies.
2.0	05 SEP 2018	Section D	Reviewed and updated currency of "Section D: Authority" references.
2.0	05 SEP 2018	Section E, 2.a	Specifies that the AMO may perform flight physicals for civilian NOAA aviators in lieu of any class FAA medical certification.
2.0	05 SEP 2018	Section E, 3.d	Removed the requirement for passengers/mission crew on NOAA operated aircraft to complete the *Report of Medical History* (DD 2807-1).
2.0	05 SEP 2018	Section G, 3.e	Formally recognizes DOD and CG waivers as appropriate for continued use within NOAA aviation.
2.0	05 SEP 2018	Section J	Inclusion of section J to recognize the CPC SOP "NOAA CORPS ELIGIBILITY DETERMINATION PROCESS FOR AVIATION AND DIVE ACTIVITIES".
2.0	05 SEP 2018	Section L, 6.	Removed the requirement for wrist measurements on quinquennial flight physical exams.
2.0	05 SEP 2018	Section L, 6.e	Reflects procedural direction from the CO, AOC.
2.0	05 SEP 2018	Section R, 24	Inclusion of flight restrictions for pregnant aviators for hurricane reconnaissance/surveillance missions.
2.0	05 SEP 2018	Appendix E	*Pregnancy Risks Associated With Hurricane Flights* – Memo
1.0	1 May 2013	All	Initial Policy