



DEPARTMENT OF THE NAVY
BUREAU OF MEDICINE AND SURGERY
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IN REPLY REFER TO

BUMEDINST 6510.6C
BUMED-3B3
20 Feb 2014

BUMED INSTRUCTION 6510.6C

From: Chief, Bureau of Medicine and Surgery
To: Ships and Stations Having Medical Personnel

Subj: AVIATION PATHOLOGY PROGRAM

Ref: (a) OPNAVINST 3750.6R
(b) NAVREGS, Article 0920
(c) Armed Forces Medical Examiner System (AFMES), Division of Forensic Toxicology Shipping Guidelines
(d) U. S. Code Title 10-Section A-General Military Law
(e) NAVMEDCOMINST 5360.1C
(f) The Naval Flight Surgeons Pocket Reference to Aircraft Mishap Investigations 6th ED, Naval Safety Center

1. Purpose. To summarize the aviation pathology effort in the Navy and its contribution in support of a joint service program.
2. Cancellation. BUMEDINST 6510.6B.
3. Background. As aircraft performance increases, human factors in flight become increasingly critical. In the event of any failure of the man-machine system, as in an aircraft mishap, a complete investigation into the causes, antecedents, and concomitant circumstances of the failure must necessarily include exhaustive studies of the personnel involved.
 - a. Reference (a) provides detailed instructions to the Flight Surgeon regarding the preparation of the Aeromedical Analysis (AA).
 - b. Reference (b) provides guidance for senior officers in regard to conformity with international law.
 - c. Reference (c) provides guidance for preparing and shipping of biological specimens for analysis to the Division of forensic toxicology, AFMES. It is available at: www.afmes.mil.
 - d. Reference (d) provides guidance on legal authority to perform postmortem examination.
 - e. Reference (e) provides for the recovery, identification, and disposition of remains. Chapter 1 of reference (e) sets forth the policies and objectives relating to the program.

f. Reference (f) provides a pocket reference to aircraft mishap investigations for aeromedical officers.

4. Disposition. Throughout the history of naval aviation, as aircraft mechanical reliability has improved, an increasing percentage of mishaps have been attributed to human error. Currently, human factors errors and aeromedical issues are causal or contributory to 80% or more of major aviation mishaps. The current guide for examining and categorizing human error in mishaps is the Human Factors Analysis and Classification System (HFACS). Reference (f) provides an overview and summary of HFACS as well as a guide for aeromedical officers conducting a mishap investigation. While the overall mishap rate is declining, the cost of aircraft, personnel training, and personnel equipment is increasing, making aircraft mishaps costly in lives and assets, and demanding of continued efforts towards mishap reduction. In addition, human factors may contribute to failure to successfully escape from a disabled aircraft or to survive after successful egress. To bring the loss of lives and dollars to the absolute minimum, it is imperative to investigate thoroughly the human aspects and aeromedical issues of every aircraft accident in an analytic manner. In a fatal aircraft accident, the investigation cannot be considered complete without an autopsy on each crewmember fatality. The autopsy should be performed by a pathologist with training in aviation or forensic pathology.

a. The investigation and evaluation of pathologic and physiologic factors of a fatal aircraft accident include the following:

- (1) Review of medical history and physical exams as noted in health record;
- (2) Detailed review of medical, social, physiological and psychological events;
- (3) Examination of the clothed body, with personal equipment intact, including photographs;
- (4) Radiographs and photographs of unclothed body;
- (5) Positive identification of the deceased by fingerprints, dental examination, and Deoxyribonucleic Acid (DNA);
- (6) Gross and microscopic autopsy;
- (7) Special studies of tissues and body fluids; and
- (8) The analysis of all pertinent evidence and the preparation of the final report.

b. It is a solidly established principle that the aircraft accident site and wreckage should be studied carefully as soon as possible by the flight surgeon and medical examiner to reveal evidence crucial to the investigation.

c. The purpose of conducting an autopsy in aviation fatalities differs somewhat from the traditional interests of pathologists in suspicious circumstances, when there is reason to believe that the cause of death might constitute a menace to the public health, or when the cause of death is unknown. In addition to these classical indications for an autopsy, the medical accident investigator is concerned with establishing or ruling out the possibility of pathological processes as causative or contributory factors in every aircraft accident. The major objectives of the medical investigation of an aircraft mishap are: The positive identification of all of the victims (based on fingerprint, footprint, dental, or DNA comparison; reconstruction of the crash sequence; determination of medical factors in the mishap; and analysis of survivability. In conducting such an autopsy on an aircrew fatality the pathologists is, in effect, a member of the accident investigation team. The medical examiner is interested not only in determining the cause of death, which most commonly in the past has been referred to as “injuries, multiple, extreme,” but also in establishing the time and cause relationship between pre-existing disease and the accident, in correlating the injuries with various factors in aircraft and equipment design, and in studying the pathological evidence which might lead to an accurate analysis of the sequence of events surrounding an accident. When viewed in this light, the cause of death is always pending in an aircraft accident until the autopsy has been conducted.

d. Authorization for conducting autopsies lies with the Armed Forces Medical Examiner per Chapter 10 U.S. Code, section 1471 (reference d). A medical examiner is on call 24/7 and is available for consultation (see paragraph 4e). It is important that nonmedical personnel, including commanding officers, be informed of the importance of autopsies and the type of scientific knowledge to be acquired by the procedure. Tact and persuasiveness are important in contacts with civil authorities. Jurisdictional issues are of paramount importance as most mishaps do not occur on federal land and therefore jurisdiction must be waived from the civilian authorities to the Armed Forces Medical Examiner. Permission or waiver of jurisdiction must be sought from competent local legal authority over the mishap site and remains. Generally, local authorities are willing to cooperate in allowing military investigators to the mishap site to perform an investigation by either waiving or sharing jurisdiction. The Armed Forces Medical Examiner will assist in coordination with local medico-legal authorities to release or share jurisdiction so that a thorough mishap investigation is performed. It is vital that the Flight Surgeon be present to assist in the examination and be prepared to guide the inquiry along lines which will provide the maximum of aeromedical information.

e. Telephone consultation should be conducted with the Armed Forces Medical Examiner at (302) 346-8648, DSN 366-8648. The Armed Forces Medical Examiner System can be accessed at <http://www.afmes.mil>. Click the tab for ‘Office of the Armed Forces Medical Examiner’ for additional information and guidance. The medical staff of the Naval Safety Center may be consulted at (757) 444-3520 or DSN 564-3520.

f. In many aircraft accidents the remains are fragmentary and dispersed. This condition shall not preclude a pathologic investigation. The Armed Forces Medical Examiner System is the acknowledged expert in the area of military aircraft mishaps. A team consisting of a forensic pathologist, forensic anthropologist, investigator, and photographer will deploy from the central

office to the mishap site or a regional armed forces medical examiner may attend to the investigation depending on the location. In the event of multiple casualties or extreme fragmentation, remains may be recovered and transported to Port Mortuary Facility at the Dover Delaware, Air Force Base, where advanced radiographic imaging equipment and additional personnel can assist in the investigation. Reference (e) provides instruction in the proper manner of submitting such material to the Armed Forces Medical Examiner.

g. The overall analysis shall reflect the sum of significant positive and negative findings obtained from all phases of the investigation; that is, from the accident scene examination, through and including the laboratory studies. The value to the analysis of continuity in the investigation chain cannot be overstressed. The final autopsy report shall be submitted to the appropriate addressees without delay, preferably within 30 working days.

5. Action

a. Addressees are directed to assist in implementing this total program. Every effort shall be made to obtain autopsies on all fatal aircraft accident cases and to insure that aeromedical interests are dealt with in the autopsy protocol. In addition, the final autopsy protocol shall be submitted to the appropriate authorities as outlined in 4g above. The flight surgeon member of the mishap board should be available to assist in conducting the autopsy.

b. Tissue specimens for toxicological studies must be forwarded as per reference (c), guidelines for preparing and shipping biological specimens. The Armed Forces Medical Examiner System can be accessed at: <http://www.afmes.mil>. Click the tab for "Forensic Toxicology." Click on the "Toxicological Shipping Guidelines" link and select AFMES Form 1323 AFMES Division of Forensic Toxicology – Toxicological Request Form under the "Resources" tab. The division of Forensic toxicology can be contacted at (302) 346-8724 or DSN 366-8724.

6. Fees for Civilian Pathologist. When it is necessary to obtain the services of a civilian pathologist, the fees incident to that requirement are properly payable from funds of the Medical Department as a medical matter. The bills covering these charges should be submitted via the naval activity authorizing the services to the Bureau of Medicine and Surgery (Code 83) for settlement.

7. Records. Records created as a result of this instruction, regardless of media and format, shall be managed per SECNAV M-5210.1 of January 2012.

8. Reports. The reporting requirements in paragraphs 4(a) through 4(g) are exempt from reports control per SECNAV M-5314.1 of December 2005, Part IV, Paragraph 7(p).

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9. Form. AFMES Form 1323 (Rev. NOV 2011), AFMES Division of Forensic Toxicology - Toxicological Request Form outlined in paragraph 5a is available electronically from the Armed Forces Medical Examiner System Web site at: http://www.afmes.mil/assets/docs/tox_request.pdf.



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