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Army Flight Surgeon Guide to Safety and Accident Investigation

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ACCIDENT INVESTIGATION – INTRODUCTION



Accident investigations are a key component of the Army Safety Program. Accidents resulting in damage to or destruction of Army resources or personnel injury or death impair combat readiness. Lessons learned from accidents provide the basis for prevention programs that help ensure mistakes of the past are not repeated. Investigations are conducted in accordance with AR 385-10 and DA Pam 385-40. They can be extremely difficult, time consuming and stressful.

Human error is a definite cause in more than 80 percent of all Army accidents. Human error can usually be attributed to one or more of the following inadequacies: standards failure, training failure, leader failure, support failure, or individual failure. As a member of the accident investigation board, the flight surgeon is responsible for the team investigating the human factors aspect of the accident.

The focus of an accident investigation is to identify the system elements that permitted or caused the accident to occur. The procedure used to identify inadequate systems elements and describe human factors, materiel failures and environmental

factors involved is called the “3W approach.” This approach requires investigators to answer three questions:

- What happened? Identify how the accident occurred and key factors that contributed to the accident.
- What caused it? Identify the errors and/or failures that caused or allowed the accident.
- What to do about it? Identify remedial measures that will correct the system inadequacy.

SAFETY AND ACCIDENT PREVENTION

Army Regulation 385-10, The Army Safety Program, and Department of the Army Pamphlet 385-90, Army Aviation Accident Prevention Program, establish the accident prevention function as an integral part of the Army Safety Program. Army Regulation 40-3, Medical Services, further identifies the flight surgeon’s responsibilities.

The flight surgeon assists and advises his or her command in all aviation medical matters. In remote areas where a flight surgeon is not assigned or readily available, local support will be provided by the servicing medical department activity to best accomplish these duties. The flight surgeon should:

- Maintain liaison with the command in implementing the aviation medicine program.
- Participate in and observe flight operations to monitor interactions of crewmembers, aircraft and environment. The flight surgeon exerts maximum effort in observing flying ability and characteristics of each assigned aviator at least annually.
- Serve as a member of aircraft accident investigation boards, when directed.

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- Serve as a member of flight evaluation boards, when directed.
- Ensure the medical portion of pre-accident plans is adequate.
- Monitor the physical and mental health of aviation personnel, including alcohol, tobacco, dietary supplements and self-medication problems (see AR 40-8).
- Advise the commander on crew endurance issues.
- Maintain aviation medical records on flight personnel, assist the unit in providing annual occupational safety and health screening for non-crewmember personnel, and ensure DA Form 4186 (Medical Recommendation for Flying Duty) prepared on flight personnel is accurate and complete before being sent to the unit commander for approval.
- Monitor survival and physiological training of aviation crewmembers and provide medical support in accordance with applicable Army regulations.
- Medically clear crewmembers for further flight duty after aircraft accidents in accordance with applicable Army regulations.
- Make recommendations to the commander, U.S. Army Combat Readiness Center, for improvement of human factors compatibility, crashworthiness, aviation life support equipment, and survival features of aircraft.
- Take part in aviation safety meetings to educate aviation crewmembers on aeromedical aspects of flight.
- Monitor the unit Aviation Life Support Equipment program.
- Assist in and advise on the unit hearing and occupational vision program.

- Ensure command consideration of preventive and occupational medicine aspects of all plans, operations, training and security missions.



DEFINITIONS (AR 385-10)



Army accident – an unplanned event or series of events that results in one or more of the following:

- Occupational illness to Army military or Army civilian personnel
- Injury to on-duty Army civilian personnel
- Injury to Army military personnel on and off duty
- Damage to Army property
- Damage to public or private property and/or injury or illness to non-Army personnel caused by Army operations (the Army had a causal or contributing role in the accident)

Army aircraft accident – an accident involving Army aircraft, or government aircraft operated by the Army when the intent to fly exists.

Intent to fly – intent for flight begins when power is applied or brakes released to move the aircraft under its own power, for the purpose of commencing authorized flight with an authorized crew. Intent for flight ends when the aircraft is at a full stop and power is completely reduced. Intent for flight is the physical act of applying power to move the aircraft, not the thought process of the crew member as to what is going to occur in the future.

Army aircraft accidents are subdivided into three types:

- **Flight accidents:** Those accidents in which intent for flight exists (as defined in the glossary) and there is reportable damage to the aircraft itself. Explosives, chemical agent or missile events that cause damage to Army aircraft with intent for flight are categorized as flight accidents to avoid dual reporting.
- **Flight-related accidents:** Those accidents in which there is intent for flight and no reportable damage to the aircraft itself, but the accident involves a fatality, injury to aircrew, ground crew, passengers, or other injury or property damage. These accidents are not to be used in the calculation of flight accident rates. Examples include unintentional cutting of a hoist cable, failure or malfunction of a hoist system or related equipment, and unintentional jettisoning of cargo hook load or external stores.
- **Aircraft ground accidents:** Injury or property damage accidents involving Army aircraft in which no intent for flight exists and the engine(s) is in operation (an installed aircraft auxiliary power unit is not considered an aircraft engine).



ACCIDENT CLASSIFICATIONS (AR 385-10)



Effective 27 December 2013

Class A accident

An Army accident in which the resulting total cost of property damage is \$2,000,000 or more; an Army aircraft is destroyed, missing, or abandoned; or an injury and/or occupational illness results in a fatality or permanent total disability. Note that unmanned aircraft systems (UAS) accidents are classified based on the cost to repair or replace the UAS. A destroyed, missing, or abandoned UAS will not constitute a Class A accident unless replacement or repair cost exceeds \$2,000,000 or more.

Class B accident

An Army accident in which the resulting total cost of property damage is \$500,000 or more, but less than \$2,000,000; an injury and/or occupational illness results in permanent partial disability, or when 3 or more personnel are hospitalized as inpatients as the result of a single occurrence.

Class C Accident

An Army accident in which the resulting total cost of property damage is \$50,000 or more, but less than \$500,000; a nonfatal injury or occupational illness that causes 1 or more days away from work or training beyond the day or shift on which it occurred or disability at any time (that does not meet the definition of Class A or B and is a lost time case).

Class D accident

An Army accident in which the resulting in total cost of property damage is \$20,000 or more, but less than \$50,000; a nonfatal injury or illness resulting in restricted work, transfer to another job, medical treatment greater than first aid, needle stick injuries and cuts from sharps that are contaminated from another person's blood or other potentially infectious material,

medical removal under medical surveillance requirements of an OSHA standard, occupational hearing loss, or a work-related tuberculosis case.

Class E Ground Accident

An Army ground accident in which the resulting total cost of property damage is \$5,000 or more but less than \$20,000.

Class E aviation accident

An Army aviation accident in which the resulting total cost of property damage is \$5,000 or more but less than \$20,000.

Class F aviation incident

Recordable incidents are confined to aircraft turbine engine damage because of unavoidable internal or external foreign object damage, where that is the only damage (does not include installed aircraft auxiliary power units). These incidents will be reported using DA Form 2397-AB-R (Abbreviated Aviation Accident Report); check "F" in the "Accident Classification" block. Note that when appropriate, it is the unit commander's responsibility to ensure that an SF Form 368 (Product Quality Deficiency Report) or equipment improvement report (EIR) for Category II or message for Category I is completed and forwarded to the appropriate agency per AR 750-6, DA Pam 750-8, or DA Pam 738-751. The U.S. Army Combat Readiness Center and the appropriate Army Headquarters will be information addressees on all Category I EIRs and product quality deficiency reports.

Notes

When appropriate, it is the unit commander's responsibility to ensure that an SF Form 368 (Product Quality Deficiency Report) or equipment improvement report (EIR) for Category II, or message for Category I is completed and forwarded to the appropriate agency per AR 750-6, DA Pam 750-8, or DA Pam 738-751. The U.S. Army Combat Readiness Center and the appropriate Army headquarters will be information addressees on all Category I EIRs and product quality deficiency reports.

PRE-ACCIDENT PLAN



The flight surgeon is responsible for developing the medical portion of the pre-accident plan. He or she should evaluate the following areas:

- Detailed accident response plan – ensure the flight surgeon is on the initial notification roster and review all responsibilities.
- Know the unit's aircraft – learn the basic operation of all unit aircraft and responsibilities of various crewmembers, and have unit instructor pilots explain and demonstrate aircraft operation.
- Coordination with:
 - Unit aviation safety officer – reviews accident response plan and coordinate with ASO to monitor flight line for potential problems.
 - Local coroner/medical examiner – determine jurisdiction and establish agreements for waiver to military.
 - Air/ground ambulance units – ensure crews are properly trained in first aid, personnel rescue and extraction techniques for various aircraft; have appropriate maps, radios and equipment; and are available and on call during scheduled flying hours (see <https://safety.army.mil> for crash videos and extraction guides).
 - Emergency department personnel – provide standardized protocol for evaluation of crewmembers in the emergency department; to prevent unnecessary discomfort for crewmembers, emergency room personnel may collect toxicology and provide initial evaluation while waiting for the flight surgeon to arrive.
 - Pathology department – Armed Forces Medical Examiner System will usually provide a forensic pathologist to perform autopsies (<http://www.afmes.mil>).
 - Crash rescue/fire department – ensure crews are familiar with extraction techniques for all types of aircraft, possible

hazards (i.e., ejection seats, explosive canopy, etc.), and toxic hazards associated with burning composite materials.

- Investigation kit – should be compact, portable and customized for personal needs.
- Pre-accident plan– periodically exercise the accident response plan to insure adequacy; exercises are required annually in accordance with AR 385-10 for all units and installations and quarterly per DA Pam 385-90 for aviation units/airfields (the flight surgeon should be included in this exercise).



ACCIDENT INVESTIGATION KIT



While there is no standardized template for an accident investigation kit, it should be compact and lightweight with all items easily accessible. The kit's contents will assist in gathering and recording physical data photographically, verbally or in written form.

- Rulers
- Index Cards
- Tape measure (50/100 ft), preferably with inches and centimeters
- Camera
- Adhesive tape
- Engineering tape or red ribbon for marking
- Stakes and tags

Search and signaling devices

- Flashlight with spare batteries
- Whistle
- Small mirror
- GPS

Personal items

- Insect repellent
- Knife with flint
- Canteen
- Soap
- Paper towels
- Hand wipes
- Leather gloves
- Plastic gloves
- Earplugs
- Sunscreen
- Sunglasses
- Lip balm
- Small first aid kit
- Surgical masks



Items for blood/fluid collection

- If possible, collect all toxicology specimens at a medical facility. All specimens must be submitted to AFMES.
- Needles, disposable

- Syringes, disposable
- Vacutainers
- Tourniquet
- Betadine swabs (avoid alcohol)
- Labels
- 3 red top tubes (per person)
- 2 lavender top tubes (per person)
- 2 grey top tubes (per person)
- 1 urine cup (per person)
- Toxicological exam forms (DD/AFMES 1323)



Items for tissue collection

Recover all tissue specimens from accident site. Obtain body tissue samples at medical facility.

- Surgical gloves and masks
- Plastic bags, self-sealing (various sizes)
- Surgical scissors
- Forceps
- Scalpel and blades
- Plastic bottles
- Tongue depressors
- Pathological material forms (SF 543)



AIRCRAFT ACCIDENT BOARD



In accordance with AR 385-10, a flight surgeon is required to be a member of an aircraft accident investigation board for:

- All Class A and B aircraft accidents.
- For Class C accidents when injuries are sustained or psychological, physiological or pathological factors are present.

If an Army flight surgeon is not available, a Navy or Air Force flight surgeon may be appointed. If a flight surgeon is not available, any Department of Defense physician may be appointed.

The responsibilities and duties of the flight surgeon board member include (DA Pam 385-40):

- Assisting in the medical, physiological and psychological aspects of the human factors portion of the investigation.
- Conducting the accident survival, emergency egress and survival/rescue portion of the investigation.
- Making a thorough investigation of the fatal and nonfatal injuries sustained to determine their causes and recommend ways of preventing or minimizing recurrence.
- Correlating the factors causing accident and injury with the safety aspect of aircraft design, restraint system design, personal equipment and existing operational and safety regulations, practices, and conditions with other board members.
- Evaluating life support and personal protective equipment that is in any manner implicated in the cause or prevention of injury (ensure equipment is forwarded with all components to the U.S. Army Aeromedical Research Laboratory (see section on ALSE evaluation).
- In case of off-post accidents or where local coroners/medical examiners are involved, promptly recovering remains for autopsy, specimen collection, records, etc.
- Completing human factors requirements for the technical report, to include DA Forms 2397-8,-9,-10 (see Report Requirements section).
- The flight surgeon is placed on orders and assigned to the accident board for the investigation. While assigned to the board, investigation responsibilities should take precedence over all other duties.



POST-ACCIDENT FLIGHT SURGEON DUTIES



When the call is received, find out:

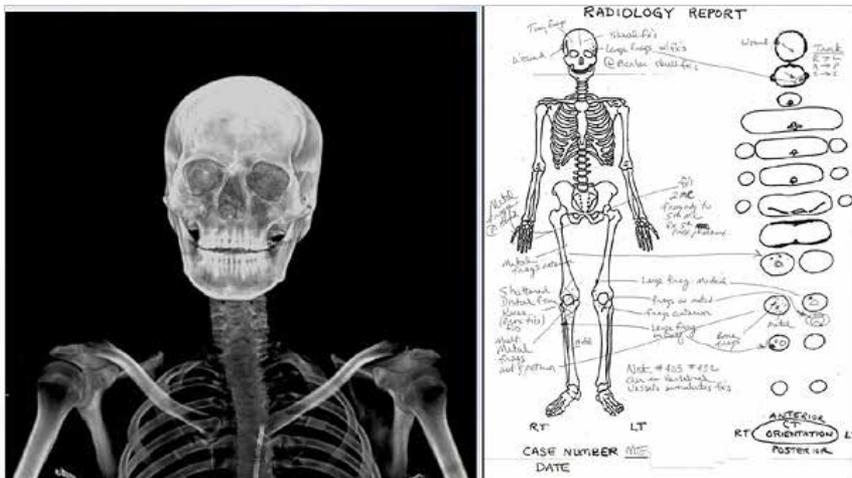
- Status and number of occupants
- Type of aircraft
- Location of accident
- Type of mission, armaments and weapons onboard

At the crash site:

- Make sure area is safe from armaments, toxins, armed ejection seats, etc.
- The first priority is the triage, treatment and evacuation of casualties.
- The wreckage should be disturbed as little as possible in the process of removing personnel.
- Keep your hands in your pockets and just observe for the first walk-through.
- Confirm and declare dead victims. Bodies of deceased personnel should be covered and left where they are for the period required to take photographs or make sketches documenting their posture and relative position. Confirm jurisdiction prior to moving bodies.
- Account for all body parts and personal equipment and mark their exact location.
- Determine and document position of bodies when initially found by crash/rescue.
- Determine and document whether life support equipment was removed or altered (i.e., flight suits cut, helmets removed, restraint harnesses cut).
- Document time of day, weather conditions and terrain.
- Body fluids from fatalities should not be collected on scene. Autopsy is the proper time to collect toxicology specimens.
- Photograph accident site, wreckage, fatalities, restraint systems, ALSE equipment (see Photography section).

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- Supervise recovery of bodies and accompany them to medical facility.
- Do not remove personal equipment from the body before radiographs are taken and autopsy.



At the medical facility:

- Evaluate survivors, to include ensuring collection of toxicology specimens.
- Secure all flight equipment, medical and dental records for survivors and fatalities.
- Assist radiologist in obtaining full-body radiographs with equipment and personal gear.
- Confirm notification of AFMES by U.S. Army Combat Readiness Center.
- Complete DA Form 3894 – Hospital Report of Death:
 - o “Time” is time of death declared by you.
 - o Cause of death is your best estimate; this may be changed on the death certificate after autopsy.

Later that day:

- Meet with arriving U.S. Army Combat Readiness Center personnel.

- Meet with arriving pathologist from AFMES and accompany him or her to the accident site, if possible, prior to conducting autopsy.
- Attend/assist with autopsy, making careful notes of any damage to flight helmets, boots, flight suits, gloves and flight vest; obtain a copy of the autopsy report from pathologist.
- Collect all damaged ALSE equipment (helmet, vest, etc.) and contact USAARL for shipment to them for further evaluation.
- Sign death certificate after autopsy and ensure body is released to next-of-kin.
- U.S. Army Combat Readiness Center surgeon is always a good consultant if help is needed.



SURVIVOR – TOXICOLOGY COLLECTION



Toxicology samples will be collected for all Class A, B and C accidents (AR 385-10, para 15-10d). Specimens should be collected at the local medical facility immediately following the accident. All toxicological examinations will be performed at AFMES-Forensic Toxicology Division. Do not perform tests locally. Instructions are available at <http://www.afmes.mil>.

AFMES requests that the following specimens be collected:

SERUM	5-10 ML (no preservative, RED TOP)
BLOOD	14-20 ML (NaF, GREY TOP)
	14-20 ML (EDTA, PURPLE TOP)
URINE	70 ML is optimal (no preservative)

* Note: Carbon monoxide analysis requires blood to be collected in a PURPLE TOP tube.

As a practical guide, collect from each of the involved aircrew:

2 red tops

2 grey tops

2 purple tops

70-100 ml urine

Prepare skin with betadine or soap and water. Do not use alcohol.

The above specimens should be collected by chain of custody conditions in accordance with AR 600-85 and must be secured from the moment they leave the crewmember's body to the time of delivery at AFMES. DD Form 1323, Toxicological Exam.

– Request and Report should be completed and sent with specimens.

AFMES routinely screens for:

Amphetamines

Antihistamines

Barbiturates

Antidepressants

Cocaine

Phencyclidine

Ethanol

Cannabinoids

Carbon monoxide

Benzodiazepines

Nicotine

Phenothiazines

Salicylates

Narcotic analgesics

Acetaminophen

NSAIDs

Sympathomimetic amine

Diuretics

Neuroleptics

Morphine

Even with the large number of tests completed, substances still are missed because of their short half-life, limited tissue distribution, etc. If there is a specific drug to be tested for, specify on DD Form 1323 and call AFMES to discuss your request.

Label tubes with the crewmember's name and social security number. Wrap tubes in sufficient absorbent material to contain

any leakage and place them in individual polyethylene bags. A larger, heat-sealed polyethylene bag is then used to keep all specimens from one individual together. Blood and urine are then packed, unfrozen, in a shipping container of sturdy cardboard, plastic or metal construction and sent by the fastest means possible (FedEx, US Express/Priority Mail, or US Second-day Mail) to AFMES. Packages must be shipped so they arrive at AFMES Monday-Friday, as weekend deliveries are not accepted (see Appendix A for packing and shipping materials and detailed instructions). Registered mail and/or "Return Receipt Requested" are not recommended and could delay shipment. Each individual sample must include an AFMES Form 1323.

The following information should be placed on the outside wrapper of all shipments:

Division of Forensic Toxicology
Armed Forces Medical Examiner System
Building 115, Purple Heart Drive
Dover AFB, DE 19902

A copy of all toxicology results are sent directly to the U.S. Army Combat Readiness Center to be placed in the accident report. A second copy is usually sent to the facility where the specimens were collected.

AUTOPSY



AR 40-21 requires an autopsy be performed on all fatally injured Army air crewmembers. Whenever possible, AFMES will conduct the autopsy. The flight surgeon assigned to the accident board should assist the pathologist and be prepared to obtain required aeromedical information.

The flight surgeon plays a critical role in jurisdiction issues. The Army has exclusive jurisdiction only when the accident occurs on property under exclusive federal control. In this case, AFMES has

authority to order the autopsy. However, most accidents involve concurrent jurisdiction. For this reason, the flight surgeon must establish a good working relationship (prior to the accident) with the local coroner or medical examiner.

If jurisdiction is concurrent or exclusively civilian, the coroner or medical examiner may:

- Retain jurisdiction and perform the autopsy;
- Retain jurisdiction and request an AFMES representative perform the autopsy under his or her jurisdiction;
- Waive jurisdiction to the Army, in which case AFMES will order the autopsy;
- Retain jurisdiction and not perform the autopsy, releasing the body to the next-of-kin, who may authorize the autopsy by a military pathologist.

When a fatal aircraft accident occurs, the USACRC immediately requests assistance from AFMES. Whenever possible, AFMES will conduct autopsies on these fatalities; however, they will not launch a team until jurisdiction is determined. If possible, prior to autopsy, AFMES will visit the accident site to correlate injury patterns, aircraft surfaces and damage. Before departure, they will provide the flight surgeon with a written autopsy protocol that includes a statement of injuries and evidence for identification. A finalized report is sent directly to the U.S. Army Combat Readiness Center to be included in the accident report.

The objectives of autopsy are:

- Identify the dead.
- Identify cause of death.
- Identify manner of death.
- Identify nature and sequence of traumatic events.
- Identify specific interactions between the victim, aircraft structure or components resulting in sustained injuries.
- Estimate crash survivability.
- Identify post-impact injuries and attributable causes.

- Determine who was in control.
- Identify physiological or medical cause factors.

Based on autopsy results, the flight surgeon must determine if any modifications to the aircraft or its equipment would have improved chances of survival for those killed, or reduced the severity of injury to survivors.

Positive identification of victims requires comparison of pre- and postmortem fingerprints, footprints, dental records or DNA typing. Presumptive identification includes visual (marks, tattoos, etc.), personal effects, I.D. tags, physical characteristics, radiography and flight manifest.

If body parts are found late in the investigation, the flight surgeon should take possession of them and call AFMES to determine if they are of use in the investigation. If so, AFMES will direct what to do. If not, it is the flight surgeon's responsibility to ensure parts are disposed of properly at the nearest military medical facility pathology department. Prompt release of remains to the next of kin is extremely important following autopsy.



HANDLING OF FATALITIES WITHOUT AFMES



While unlikely, it is possible AFMES will not be available to provide onsite assistance for a fatal accident. Should this occur, the flight surgeon should use the following guide in coordination with the local medical examiner or pathologist to collect as much useful data as possible for AFMES. Further guidance is available through AFMES at (302) 346-8648.

Collection

Prompt collection of body tissue is essential so it is protected from contamination and physical/chemical change, and preserved in as fresh a state as possible. Before collecting specimens, the flight surgeon must ensure the body, or fragments thereof, are properly identified and rule out commingling of tissues if more than one fatality is involved. If this cannot be ensured, specimens must be submitted as commingled remains.

Body fluids should not be collected on site by percutaneous puncture; you might contaminate blood with gastric contents or urine with blood, and specimens are much easier to obtain at autopsy. If no fluids or organs can be recovered, several hundred grams each of muscle, fat and red bone marrow can be submitted for most determinations, including carbon monoxide. In severe crash injuries, the gallbladder will often remain intact, permitting bile collection.

Remember that even in the most severely fragmented cases, valuable information can often be obtained from only a few milligrams of blood or tissue. If in doubt, submit as much tissue as practical. The following tissue and fluid samples are recommended:

Blood	50-100 ml
Urine	100 ml (no preservatives)

Bile	All available
Vitreous	All available
Liver	100 gm
Brain	100-200 gm
Kidney	50 gm
Lung	50 gm
Stomach contents	50 ml
Skeletal muscle	200-300 gm
Fat	200 gm

Package and preservation

Each specimen should be individually packaged and heat sealed in sturdy polyethylene bags. Cellophane-laminated plastic bags must not be used for frozen specimens as they become brittle, crack and come apart when placed in dry ice 24 hours or longer. Fluids should be placed in tightly closed (preferably screw cap) polyethylene containers. All primary containers are to be labeled with the individual's name and social security number, type of specimen, date, name of submitting facility, and flight surgeon's name.

Avoid contamination of specimens with solvents, which may be found in some inks, formalin or formalinized tissue, alcohol, disinfectants or deodorants. Ensure each tissue is individually packaged, since distribution studies of different organs are useful in determining time of ingestion of any drugs. Chemical preservation, such as with formalin, embalming fluids, etc., causes interference to such an extent the tissue is rendered nearly useless and the interpretation of results virtually impossible. Freezing is the method of choice in preserving tissue, dry ice being extremely effective.

It is important that a properly filled AFMES Form 1323 (Toxicological Examination – Request and Report) be submitted with each accident fatality. A DD Form 1322 (Aircraft Accident Autopsy Report) or SF 503 (Autopsy Protocol) should be submitted as well. Information on the victim's health status and

a brief summary of the accident, including a site description and condition of the body when recovered, should be enclosed. Forward these documents along with any relevant paperwork (in its own polyethylene bag) to AFMES.

Shipment

All primary containers should be wrapped with sufficient absorbent material to contain any leakage and placed in a secondary container (polyethylene plastic bag) and heat sealed. A third large polyethylene bag may be used to store all the specimens from one individual together (see Appendix A for packing/shipping materials). Frozen tissue and body fluids must be packed in an insulated shipping container large enough to hold the specimens plus a quantity of dry ice approximately three times the weight of the specimens. A more precise guide may be found in Appendix A.

Frozen specimens and dry ice must never be packed in containers that do not allow gas to escape. Gas pressure within a sealed container presents a potential hazard and could cause the container to burst. (Similarly, dry ice must never be placed in a thermos bottle.) All specimens **MUST** be shipped by overnight mail, as it is the only method that will deliver specimens to AFMES as quickly as necessary to preserve them in their frozen state. It is extremely important that specimens be packed with utmost care in sturdy containers, labeled properly, and include all required paperwork.



The following information should be placed on the outside wrapper of all shipments.

Contributor's address

Division of Forensic Toxicology
Armed Forces Medical Examiner System
Building 115, Purple Heart Drive
Dover AFB, DE 19902
RUSH – FRAGILE
Aircraft accident
Clinical/diagnostic specimens enclosed
Shipment complies with US domestic and IATA international packaging regulation
Dry ice will last until (date)

AFMES NOTIFICATION



Telephone numbers:

Toxicology Division

COMM (302) 346-8724

DSN 366- 8724

Main Desk

COMM (302) 346-8648

DSN 366-8648

Notifying AFMES that specimens are about to be shipped contributes immeasurably to expeditious handling of the shipment. The message and/or telephone call should include the following information:

- Aircraft accident material
- Patient's name, rank and social security number
- Method of shipment (Air Express/Air Freight)
- Name of area airport to receive shipment
- Name of airline
- Flight number
- GBL/airbill number
- Contributor's name
- Departure time and date

- Arrival time and date
- Brief description of contents
- Chain of custody, if required
- Other information

CRASH SURVIVAL (CREEP FACTORS)



Deceleration forces on an aircraft can be calculated using known velocities, stopping distances, ground and airframe deformation, etc. These figures should then be viewed from the perspective of aircrew survival. However, G forces imposed on the airframe might have only limited similarity to the forces imposed on crewmembers.

- Tolerable deceleration forces.
- Maintaining sufficient volume of occupiable space.
- Non-lethal post crash environment.
- Time to definitive medical care.

The CREEP concept provides an easy way to organize all aspects of crash survival:

- C – Container
- R – Restraint
- E – Environment
- E – Energy absorption
- P – Post-crash factors

Container

For a crash to be survivable, the aircraft structure must maintain integrity, preserve an adequate volume of living space and prevent penetration by objects throughout the crash sequence. Modern helicopter design provides reasonably good protection when the helicopter remains upright. However, due to the lightness of the cockpit/cabin overhead structure, helicopters generally provide little protection during rollover accidents.

Restraint

It is critical for impact survival that occupants and contents be securely restrained. Failure of the restraint system results in a much higher probability of injury. Loose items could become missiles on impact, causing injuries and possibly hampering rapid egress.

Environment

Even when properly restrained, injuries may result through contact with various surfaces or objects in the aircraft.

Energy absorption

To prevent injury during a crash, the airframe and seat must attenuate crash forces transmitted to the occupants. This can be accomplished through the use of energy absorbing materials and designs located between the occupants and point of impact.

Post-crash factors

Post-crash fire, toxic fumes, poor communications, remote location and inadequate training can adversely affect survival. A delay in rescue and time to definitive medical care can result in major injuries becoming fatal injuries.



IMPACT TOLERANCE LIMITS



A survivable accident is one in which impact conditions are within human tolerances and crew and passenger occupiable space remains reasonably uncompromised. In addition, post-crash factors must be such that successful egress is possible.

Human tolerance to abrupt acceleration depends primarily on:

- Magnitude of the accelerating force.
- Duration of the accelerating force.
- Rate of onset of the accelerating force.
- Direction in which the accelerating force is applied to the body.
- Manner in which the occupant's body is supported during the accelerating force.

The following estimates can be used to determine the probability of survival:

- Human tolerance limits exceeded by a factor of 2 or more, survival unlikely.
- Human tolerance limits exceeded by a factor of 1.5, survival is doubtful.
- Human tolerance limits exceeded by a factor of 1.25 or less, survival depends on specific CREEP factors.
- If limits are not exceeded, survival expected.

When crash forces are not clearly in X, Y or Z axis, extrapolate.

Whole body impact tolerance limits (based on 250 G/sec onset rate, using restraint system):

-Gx (eyeballs out)	45 G over 0.1 sec
	25 G over 0.2 sec
+Gx (eyeballs in)	45 G over 0.1 sec
	83 G over 0.04 sec

-Gz (eyeballs up)	15 G over 0.1 sec
+Gz (eyeballs down)	25 G over 0.1 sec
Gy (eyeballs left or right)	11.5 to 20 G over 0.1 sec

Deceleration injuries:

Pulmonary contusion	25 G
Nose fracture	30 G
Vertebral body compression	20-30 G
Fracture/dislocation of C1/C2	20-40 G
Mandible fracture	40 G
Maxilla fracture	50 G
Aorta tear	50 G
Aorta transection	80-100 G
Pelvic fracture	100-200 G
Vertebral body transection	200-300 G
Total body transection	>350 G
Concussion	60 G over 0.02 sec
	100 G over 0.005 sec
	180 G over 0.002 sec

AVIATION LIFE SUPPORT EQUIPMENT (ALSE) EVALUATION



In accordance with AR 40-21, the flight surgeon is required to correlate factors causing the accident and injuries with system design, personal equipment and regulations. This analysis includes evaluation of life support and personal protective equipment that is, in any manner, implicated in the cause or prevention of injuries.

Any suspect equipment should be forwarded to U.S. Army Aeromedical Research Lab (USAARL) for further analysis; USAARL manages the Aviation Life Support Equipment Retrieval Program (ALSERP). This program evaluates and records the efficiency of ALSE in the aircraft accident environment. Personal injury data are correlated with the item provided for protection, along with

information on accident kinematics and dynamics. ALSE items are assessed for damage to determine if the design was adequate, if it was manufactured to design, and/or if it was properly worn by the crewmember. Data is further used to identify design deficiencies and substantiate the need for system improvements.

ALSE items that may be sent to USAARL include helmets, seats including energy attenuating mechanisms, restraint systems, inertia reels, cockpit air bags (CABS) and the electronic control sensory units (ESCU), survival vests, flight suits, boots and gloves. The unit will be provided a receipt for property book upon arrival at USAARL (DA Pam 385-40).

Send all equipment requiring further evaluation to:

U.S. Army Aeromedical Research Laboratory
ATTN: ALSERP
BLDG 6901, Farrell Road
Fort Rucker, AL 36362

Notify USAARL prior to shipping (DSN 558-6920/6960; COMM (334) 255-6920/6960) or to answer any questions regarding ALSE damage and assistance with restraints/seats and survivability issues. ALSERP email: usarmy.rucker.medcom-usaarl.other.alserp-operator-usaarl@mail.mil



WITNESS INTERVIEWS (DA PAM 385-40)



The board president usually conducts all witness interviews. Unless the individual objects, all interviews are recorded. It is important for the flight surgeon to be present during interviews so he or she can obtain all possible information regarding the accident. When the board president completes an interview, other board members will have an opportunity to ask the witness specific questions.

In all accidents, witnesses will be advised that accident prevention is the sole purpose of the investigation. This means that, within the Army, witness statements may not be used as evidence to obtain evidence in connection with any legal, disciplinary or adverse administrative action. Statements cannot be used by the Army against the witness or anyone else.

The flight surgeon will conduct/assist with interviews of witnesses injured and hospitalized due to the accident. Under these circumstances, there are several items to consider:

- The medical facility admitting and treating the injured survivors is responsible for their well being. Therefore, interviews of inpatients will be coordinated with the medical facility and attending physician so as not to conflict with medical needs.
- Timeliness, though desired, is not an overriding requirement. The nature and degree of injury may require subsequent evacuation of a key witness to another medical facility far removed from where the board is conducting its investigation. If this situation occurs prior to the interview, it may be necessary for the flight surgeon to conduct the interview at the other facility at a later date. If this is not feasible, it may be necessary to contact a flight surgeon or other DoD physician near the other medical facility to act as a proxy interviewer.

- In a hospital setting, it is better to prepare questions in advance. Questions should be tailored to obtain responses essential to the investigation. In cases where the person being interviewed is giving testimony while under the influence of medications, it is the flight surgeon's responsibility to qualify the credibility of information obtained under these circumstances. Two or three short interviews may be more beneficial and have less negative emotional effect than one lengthy session. In all cases, the well being of the witness is paramount at all times and will govern conduct of the interview. It is not unusual for a survivor to be unable to recall details of the accident that would be useful to the board. This condition is often temporary and should never be interpreted as a lack of cooperation. Patience and empathy on the part of the interviewer might eventually result in obtaining the desired information, whereas persistence and impatience might not.



PHOTOGRAPHY



The primary reason for taking photos at accident scenes is to illustrate, record and verify evidence, especially perishable evidence. Whenever possible, use an experienced photographer and supervise him or her. Other considerations for obtaining photographic evidence include:

- Chronologically number and identify all pictures as they are taken, noting location.
- You can never take too many pictures.
- The board president should own and maintain all photos.
- Always take a flash unit to the site for fill-in flash and night photography.
- If photographs are taken at night, repeat shots the following day if possible.
- Use known objects in the scene as size references whenever possible. In overall scenes, the presence of a person may be sufficient; in close-up photos, a hand or portion of a ruler may work best.

Scene coverage (ground)

- Show enough of the scene to provide good orientation. Take several pictures while moving 360 degrees around the aircraft.
- If there is a fire, pictures taken during the event are often useful.
- Photograph trees, obstacles and evidence of ground strikes prior to final impact.
- Photograph multiple views of bodies and ALSE in position prior to moving.
- Photograph large body part specimens both close up and in relation to the majority of the wreckage or accident scene.
- Get close-up photos of tissue and blood found on aircraft structures or at the accident scene prior to removal.

- Get detailed views of specific components: cockpit, switches, gauges, circuit breakers, flight controls, equipment with curious damage, seats, restraint systems, inertia reels, etc.
- Photograph the most charred or burned area.

Autopsy coverage

- Photos will be obtained by AFMES or medical photographer.
- Take total body photographs from all directions prior to removing flight equipment.
- Photograph close-up views of damage to flight equipment and associated injuries (with and without a ruler).
- Obtain total nude body photographs from all directions.
- Photograph close-up views of all wounds, anomalies and other findings.
- Obtain other views as indicated.
- Obtain photocopies of each exposed radiograph.
- Autopsy photographs are considered privileged and will be maintained by the flight surgeon board member until they are forwarded to the U.S. Army Combat Readiness Center for review by the U.S. Army Combat Readiness Center surgeon and destroyed.

As a member of the accident investigation board, the flight surgeon is responsible for providing substantiating data and/or completing several of the DA Forms 2397 series technical reports. These reports provide guidance in conducting the investigation, ensure minimal appropriate data is collected, and the standard format improves ease of analysis. Detailed information regarding completion of each of these forms can be found in DA Pam 385-40. The Aircraft Accident Worksheet (Appendix D) should be utilized to ensure all necessary information is collected.



REPORT REQUIREMENTS (FORMS)



DA Form 2397-3 (Narrative)

For each of the following sections, the flight surgeon, along with the board recorder, will write a brief human factors narrative.

- Personnel background information (for each crewmember). Describe:
 - o Currency of flight physical.
 - o Waivers and other irregularities in medical history that may be relevant.
 - o Professional reputation in unit and opinions of peers, subordinates and others who have flown with him or her.
 - o Social habits, financial and marital well being, sleep and dietary habits, use of nicotine and alcohol.
 - o Use of medication (prescribed or self medication) and supplements, including type, dose and possible effect on performance.
 - o Unit crew rest policy and compliance.
 - o Summary of the post-accident medical examination, including a brief description of injuries and how they occurred.
- Aircraft suitability. Describe suitability to perform mission (instructor pilot is usually responsible).
- Communications/air traffic services. Describe evidence relating to:
 - o Communication equipment.
 - o Communication that occurred or failed to occur among the crew, between crew and passengers, and between crew and outside services
 - o Consider language difficulty, clarity of spoken words and precision of instruction.
- Meteorological information. Describe weather conditions that existed at the time of the accident.
- Navigation aids. Describe adequacy of navigation aids (instructor pilot is usually responsible).

- Ground support services.
- Crash survival. Describe:
 - Crashworthiness of the aircraft in terms of crash sequence, impact conditions, kinematics and crash impact forces.
 - Performance of the restraint system and adequacy of the aircraft structure to maintain occupiable space attenuate crash forces.
 - Occupant injury in relation to crashworthiness.
 - Injuries that occurred during or after the crash sequence.
 - Performance of personal protective equipment (helmet, visor, clothing, etc.).
- Emergency egress, survival and rescue. Describe:
 - Details of egress, survival and rescue investigation.
 - Where individuals were located in the aircraft, how and where they exited the aircraft, difficulties encountered, and position of the aircraft at time of egress.
 - Factors that may have enhanced or inhibited the success of the survival/rescue situation.
 - When and how rescue personnel were notified and how long it took to respond to the initial notification, arrive at the accident site and evacuate survivors.
 - Problems associated with delays in rescue.

For each of the following sections, the flight surgeon, along with the board recorder, will write a brief human factors narrative.

- Personnel background information (for each crewmember). Describe:
 - Currency of flight physical.
 - Waivers and other irregularities in medical history that may be relevant.
 - Professional reputation in unit and opinions of peers, subordinates and others who have flown with him or her.
 - Social habits, financial and marital well being, sleep and dietary habits, use of nicotine and alcohol.
 - Use of medication (prescribed or self medication) and supplements, including type, dose and possible effect on performance.

- o Unit crew rest policy and compliance.
- o Summary of the post-accident medical examination, including a brief description of injuries and how they occurred.
- Aircraft suitability. Describe suitability to perform mission (instructor pilot is usually responsible).
- Communications/air traffic services. Describe evidence relating to:
 - o Communication equipment.
 - o Communication that occurred or failed to occur among the crew, between crew and passengers, and between crew and outside services.
 - o Consider language difficulty, clarity of spoken words and precision of instruction.
- Meteorological information. Describe weather conditions that existed at the time of the accident.
- Navigation aids. Describe adequacy of navigation aids (instructor pilot is usually responsible).
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- Crash survival. Describe:
 - o Crashworthiness of the aircraft in terms of crash sequence, impact conditions, kinematics and crash impact forces.
 - o Performance of the restraint system and adequacy of the aircraft structure to maintain occupiable space attenuate crash forces.
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 - o Injuries that occurred during or after the crash sequence.
 - o Performance of personal protective equipment (helmet, visor, clothing, etc.).
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 - o Details of egress, survival and rescue investigation.
 - o Where individuals were located in the aircraft, how and where they exited the aircraft, difficulties encountered, and position of the aircraft at time of egress.
 - o Factors that may have enhanced or inhibited the success of the survival/rescue situation.
 - o When and how rescue personnel were notified and how long it took to respond to the initial notification, arrive at the accident site and evacuate survivors.

- o Problems associated with delays in rescue.

DA Form 2397-8 (Personal Data)

The flight surgeon is responsible for obtaining the following information for all crewmembers involved in the accident:

- Hours slept over last 24, 48 and 72 hours.
- Hours awake prior to the accident.
- Duration of last sleep period.
- Hours worked over last 24, 48 and 72 hours.
- Height, weight and age.
- Date of last physical and waivers, if any.
- Date of post-accident medical examination.
- Whether required lab tests were completed (results will be annotated by the USACRC).

DA Form 2397-9 (Injury Data)

This form will be completed by the flight surgeon for all individuals involved in the accident who sustain an injury. The following information will be recorded:

Army Flight Surgeon

- All injuries ranked by severity, from most to least severe.
- Suspected cause of each injury.
- Injury cost.
- Cause of death based on autopsy report.

DA Form 2397-10 (Protective Equipment/Escape/Survival/Rescue Data)

This form will be completed by the flight surgeon for all individuals onboard the accident aircraft. The following information will be recorded:

- Use of protective/restraint/survival equipment, relationship to injuries and damage codes.
- Methods and difficulties of egress.
- Detailed time sequence for response of rescue personnel.
- Problems associated with survival and rescue.
- Factors that helped survival and rescue.

INVESTIGATION TIPS



Keep the following tips in mind when investigating any accident:

- Periodically review and update your pre-accident plan.
- Most evidence pertaining to the cause of the accident is available the first day and will deteriorate with time. Do not delay the start of an investigation due to poor weather conditions.
- Avoid taking a scrap of information and attaching a theory to it.
- Learn as much as possible from the wreckage at the crash site before moving anything.
- Do not rely on your memory. Make notes and use a tape recorder.
- Do not take shortcuts; you may unknowingly destroy evidence.
- Obtain rescue response and ambulance run sheets from EMS/TOC logs, if available.
- Inquire about documentation of any medication (prescription or over the counter), supplements or medical devices at the deceased's place of residence (Criminal Investigation Division and Mortuary Affairs).
- Keep an open mind. Preconceived ideas might result in a search for evidence to support the assumption, overlooking other evidence that may lead in a different direction.
- Do not look for just one cause; there are usually several.
- Do not wash, clean or brush off dirty items before examination.
- Do not touch settings on control dials, switches or anything that can be changed. Record and photograph them. Remember, you can never take too many pictures.
- Do not hesitate to call the U.S. Army Combat Readiness Center surgeon with questions.



APPENDIX A PATHOLOGY SHIPMENT CONTAINERS

Federal stock items suggested for use:

Bag, Polyethylene, Flat Heat Seal Closure

- 8105-00-579-9286 3 x 5 inches
- 8105-00-680-0503 4 x 6 inches
- 8105-00-702-7177 5 x 12 inches
- 8105-00-579-9285 6 x 7 inches
- 8105-00-702-7178 18 x 48 inches
- 8105-00-299-8532 20 x 40 inches
- 8105-00-200-0195 24 x 24 inches

Box, Plastic, Insulated, Meat, Dairy Products and Laboratory Samples

8115-00-682-6525

Corrugated Mailing Carton for Above Box (8115-00-682-6525)

8115-00-183-9490

Box, Pathological, Shipping, Insulated

8115-00-226-1199 2 cu. Ft.

8115-00-965-2300 5 cu. Ft.



APPENDIX B TIMETABLE FOR FROZEN SPECIMENS

This table provides guidance for personnel in preparing fresh tissue specimens being shipped for use in toxicological studies. However, this table is just a guideline; it is not meant to be absolute. It is the shipper's responsibility to pack specimens in a manner that will maintain their frozen state until arrival at AFMES.

Outside temperature	Hours in transit	Weight of specimen	Amount of dry ice
Below 50° F	72	2 lb	5 lb
	48	3 lb	4 lb
	24	4 lb	3 lb
50° - 80° F	72	2 lb	5 lb
	48	3 lb	4 lb
	24	3 lb	4 lb
80° - 100° F	72	1 lb	6 lb
	48	2 lb	5 lb
	24	3 lb	4 lb
Over 100° F	(Not recommended for shipments requiring more than 48 hours)		
	48	1 lb	6 lb
	24	2 lb	5 lb



APPENDIX C

POSITIVE TOXICOLOGY RESULTS – INTERPRETATION

Carbon Monoxide

Tobacco smoking causes increased exposure to carbon monoxide. Carboxyhemoglobin levels in nonsmokers range from 0-1% percent. A two-pack-a-day smoker will have an 8-9% COHb level. Increased COHb due to smoking reduces inspired oxygen tension, and the adverse impact of carboxyhemoglobinemia increases with altitude. Prior to flight, a one-pack-a-day smoker is already functioning at an altitude of 4,000 feet.

For purposes of aviation pathology, CO levels in the blood are considered normal at <3% for non smokers and <10% for smokers. Levels above these values indicate the individual was exposed to the products of combustion, either before or after the mishap. If CO is elevated and the crewmember sustained instantaneous fatal injury, there was most likely an in-flight fire or other source of CO prior to impact. For survivors, exposure to a post-crash fire will increase CO levels; in instances of no post-crash fire, elevated levels are usually due to in-flight exposure.

Lactic Acid

Values over 200 mg/100 gm are considered to be indicative of central nervous system hypoxia. This may be due to high altitude exposure, low oxygen tension, reduced oxygen supply, prolonged shock or traumatic injuries that impair adequate oxygenation or blood circulation in the central nervous system (CNS). However, non-elevated levels do not rule out hypoxia as a cause of the mishap.

Ethanol

The significance of detectable levels of alcohol (ethanol) in survivors' blood or urine is usually clear. Postmortem specimens raise another question, however: Is it real, or a postmortem artifact due to decomposition? Alcohol is analyzed at AFMES by gas chromatography, the standard for volatile analysis, due to a common lack of residual blood and urine. AFMES uses tissue homogenate extracts from various organs. Tissues are frequently

in an advanced stage of decomposition resulting in the presence of volatiles, including ethanol.

The assessment of ethanol in putrefactive tissues depends on many factors:

- Condition of the tissues.
- Presence of several tissues.
- Distribution in several tissues.
- 72-hour history and witness statements.
- Flight surgeon's direct input.

Alcohol concentrations due to bacteria have been reported up to 200 mg/dl or 0.2. The presence of other alcohols (such as propanol) is a good indicator of decomposition. Additionally, the presence of acetaldehyde with ethanol is considered good evidence of postmortem alcohol production. If alcohol is found in urine or vitreous obtained postmortem, the ingestion of alcohol before death is strongly suggested.



APPENDIX D AIRCRAFT ACCIDENT WORKSHEET

NAME _____ GRADE _____ SSN _____

DUTY DURING MISHAP _____ UNIT _____

LOCAL ADDRESS _____

UNIT PHONE _____ HOME PHONE _____

DATE OF MOST RECENT FLIGHT THIS SERIES (PRIOR TO MISHAP) _____

DURATION OF MOST RECENT FLIGHT _____

IF RATED AVIATOR, DATE OF LAST STANDARDIZATION FLIGHT, THIS SERIES _____

AND DATE GRADUATED IERW _____

IF IERW STUDENT, CURRENT LEVEL OF TRAINING _____

AND ANTICIPATED GRADUATION DATE _____

HOURS FLOWN ON

CUM HOURS

DAY OF MISHAP _____

DAY PROR TO MISHAP _____

2 DAYS PRIOR TO MISHAP _____

3 DAYS PRIOR TO MISHAP _____

HOURS WORKED ON

CUM HOURS

(HOURS WORKED FROM ARRIVAL TO DEPARTURE FOR DUTY SECTION)

DAY OF MISHAP _____

DAY PRIOR TO MISHAP _____

2 DAYS PRIOR TO MISHAP _____

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3 DAYS PRIOR TO MISHAP _____

HOURS SLEPT (DURING 24 HOUR PERIOD OF) CUM HOURS

DAY OF MISHAP _____

DAY PRIOR TO MISHAP _____

2 DAYS PRIOR TO MISHAP _____

3 DAYS PRIOR TO MISHAP _____

HOURS CONTINUOUSLY AWAKE PRIOR TO MISHAP _____

TOTAL TIME IN COCKPIT PRIOR TO MISHAP _____

DUTY HOURS REMAINING, HAD MISHAP NOT OCCURRED _____

YOUR CREWMEMBER LOCATION AT TIME OF MISHAP _____

DID YOUR SHOULDER HARNESS INERTIAL REEL LOCK AUTOMATICALLY

YOUR ORDER OF EGRESS/EXIT AFTER MISHAP _____

TOTAL FLYING HOURS _____ COMBAT FLYING HOURS _____

INSTRUMENT QUALIFICATION _____ WHEN QUALIFIED _____

DATE LAST LEAVE ENDED _____ TYPE OF LEAVE _____

NUMBER OF DAYS OF LEAVE TAKEN _____

DATE OF LAST FLIGHT PHYSICAL _____ HT _____ WT _____

BIRTH DATE _____ AGE _____ SEX _____ RACE _____

SMOKING HISTORY (HOW MANY PACKS PER DAY FOR HOW MANY YEARS) _____

LIST OF MEDICAL WAIVERS _____

HIGHEST DEGREE ACHIEVED ACADEMICALLY _____

DATE, CLASS OF MISHAP AND TYPE OF AIRCRAFT IF YOU HAVE PREVIOUSLY BEEN INVOLVED IN AN AIRCRAFT ACCIDENT (USE BLANKS BELOW)

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DATE	CLASS OF MISHAP	TYPE OF AIRCRAFT
_____	_____	_____
_____	_____	_____
_____	_____	_____

THE FOLLOWING QUESTIONS PERTAIN TO EQUIPMENT WORN AT THE TIME OF THIS MISHAP

TYPE OF HELMET _____ VISOR UP/DOWN _____
 VISOR TINTED/UNTINTED _____
 GLASSES REQUIRED/NOT REQUIRED _____
 GLASSES TINTED/UNTINTED _____
 EAR PLUGS WORN YES/NO _____

FOR EACH OF THE FOLLOWING ITEMS, PLEASE ANNOTATE "Y" FOR YES, "N" FOR NO, OR "N/A" FOR NOT APPLICABLE IN EACH COLUMN BELOW TO INDICATE: (1) WAS THE ITEM "REQUIRED" FOR THIS MISSION, (2) WAS THE ITEM "AVAILABLE" DURING THE MISSION, AND (3) WAS THE ITEM "USED" DURING THE MISSION.

	REQUIRED	NEEDED	AVAILABLE	USED
1. HELMET	_____	_____	_____	_____
2. VISOR	_____	_____	_____	_____
3. GLASSES	_____	_____	_____	_____
4. FLIGHT SUIT	_____	_____	_____	_____
5. FLIGHT GLOVES	_____	_____	_____	_____
6. FLIGHT JACKET	_____	_____	_____	_____
7. COMBAT BOOTS	_____	_____	_____	_____
8. LAP BELT	_____	_____	_____	_____
9. SHOULDER HARNESS	_____	_____	_____	_____
10. INERTIAL REEL	_____	_____	_____	_____
11. SURVIVAL REEL	_____	_____	_____	_____
12. ELM	_____	_____	_____	_____

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FOR ANY ITEM LISTED ABOVE: DO YOU THINK THE ITEM FAILED TO PREVENT THE INJURY FOR WHICH IT WAS DESIGNED? PLEASE INDICATE THE ITEM NUMBER AND HOW IT FAILED TO PERFORM TO YOUR EXPECTED STANDARDS (CONTINUE ON BACK IF NECESSARY).

DESCRIBE THE SIGNIFICANT EVENTS THAT, IN YOUR OPINION, LED TO THIS MISHAP, THE ACTUAL MISHAP, AND EGRESS AND EVENTS AFTER THE MISHAP (CONTINUE ON BACK IF NECESSARY).

PRE-MISHAP EVENTS _____

MISHAP EVENTS _____

POST-MISHAP EVENTS _____

CHRONOLOGICAL ACCOUNT OF YOUR ACTIVITIES DURING THE 72 HOURS PRIOR TO THE MISHAP: IN AS MUCH DETAIL AS POSSIBLE, LIST ALL ACTIVITIES TO INCLUDE TIME OF WAKE-UP, TIME OF MEALS, CONTENT OF MEALS, TIME OF DAILY ACTIVITIES (WORK/RELAXATION). IF YOU WERE AT A LOCATION OUTSIDE FORT RUCKER (E.G., PANAMA CITY, FLA.) PLEASE INDICATE.

EXAMPLE OF A DAY (24-HOUR PERIOD)

10 MAY 1991: 0500: WAKE UP; 0600: PT; 0700: BREAKFAST CONSISTING OF OATMEAL, CEREAL, ORANGE JUICE, TOAST AND BACON; 0745: DUTY DAY BEGAN WITH PLANNING OF AM FLIGHT; 0900-1130: DAY VFR FLIGHT; 1200-1300: DEBRIEF; 1300-1400: LUNCH CONSISTING OF CHICKEN NOODLE SOUP, CRACKERS AND SALAD; 1400-1630: ACADEMICS; 1630: DUTY DAY ENDS; 1700-2000: STUDIED SYLLABUS FOR NEXT DAY; 2000-2100: DINNER CONSISTING OF PIZZA, COCA-COLA AND ICE CREAM; 2100-2200: WATCHED TV; 2200-0500: ASLEEP.

DAY OF MISHAP _____

DAY PRIOR TO MISHAP _____

2 DAYS PRIOR TO MISHAP _____

3 DAYS PRIOR TO MISHAP _____

ADDITIONAL NOTES

PERCEIVED STRESSES (CAREER, FINANCIAL, MARITAL, ETC.)

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MEAL PATTERN (EATS 3-4 MEALS A DAY, HOURS ARE REGULAR/IRREGULAR, PREFERS FAST FOODS/PREPARED FOODS, ETC.)

MARITAL STATUS (SINGLE/MARRIED/DIVORCED)/CHILDREN

PT PROGRAM (DESCRIBE IN TERMS OF TYPE, DURATION AND FREQUENCY OF EXERCISE)

PERSONNEL EVACUATION/ESCAPE

- METHOD OF ESCAPE _____
- YOUR LOCATION IN AIRCRAFT _____
- EXIT ATTEMPTED _____
- EXIT USED _____
- AIRCRAFT ATTITUDE _____
- COCKPIT/CABIN CONDITIONS _____
- ESCAPE DIFFICULTIES _____

LAPSED TIME FOR RESCUE ACTION

	HOURS OF DAY	LAPSED TIME
• NOTIFICATION OF RESCUE PERSONNEL	_____	_____
• INDIVIDUAL PHYSICALLY REACHED	_____	_____
• INDIVIDUAL PLACED ABOARD RESCUE VEHICLE	_____	_____
• RESCUE COMPLETED/ABANDONED	_____	_____

DISTANCE FROM ACCIDENT TO ACTUAL RESCUE AT TIME OF ACCIDENT

- TO AIRCRAFT IN NAUTICAL MILES _____
- TO GROUND VEHICLE IN STATUTE MILES _____
- PERSONNEL SURVIVAL/RESCUE
- SURVIVAL PROBLEMS ENCOUNTERED _____
- MEANS USED TO LOCATE INDIVIDUAL _____
- RESCUE EQUIPMENT USED _____
- FACTORS HELPING RESCUE _____
- FACTORS COMPLICATING RESCUE _____
- INDIVIDUAL PHYSICAL CONDITION _____
- VEHICLES ACTUALLY PERFORMING EVACUATION _____
- OTHER VEHICLES ASSISTING IN RESCUE _____

CREWMEMBER SECTION

AEROMEDICAL

- ANY GROUNDING IN LAST 30 DAYS? _____
- ANY ILLNESS/INJURY IN LAST 30 DAYS? _____
- ANY PROFILES? _____
- CORRECTIVE LENSES (REQ/WORN)? _____
- PREVIOUS HEAD INJURY? _____
- MEDICATIONS LAST 30 DAYS? _____
- DENTAL WORK LAST 30 DAYS? _____

SOCIAL HISTORY

- MARRIED OR SINGLE? _____
- MARITAL PROBLEMS? _____
- DO YOU LIVE WITH YOUR SPOUSE? _____

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- WHERE DO YOU LIVE? _____
- TIME AT PRESENT POST? _____
- NAME OF BEST FRIEND? _____
- HOW MUCH DO YOU SMOKE? _____
- HOW MUCH DO YOU DRINK? _____
- DO YOU USE CHEWING TOBACCO/SNUFF? _____

NUTRITION

- TIME OF LAST MEAL? _____
- ADEQUATE FLUID INTAKE? _____
- ARE YOU PRESENTLY DIETING? _____
- RECENT WEIGHT LOSS? _____
- RECENT WEIGHT GAIN? _____
- RECENT LOSS OF APPETITE? _____

FATIGUE

- HAVE YOU BEEN SUBJECTED TO ANY STRESS RECENTLY, SUCH AS DEATH OR ILLNESS IN THE FAMILY? _____
- DO YOU FEEL FATIGUE WAS A POSSIBLE FACTOR IN THIS ACCIDENT?

- DO YOU FEEL THE COMMAND IS ADEQUATELY ADDRESSING THE PROBLEM OF FATIGUE?



KEY TELEPHONE NUMBERS

Armed Forces Medical Examiner System
(<http://www.afmes.mil>)

Forensic Pathologist DSN 366-8724 COMM (302) 346-8742

Toxicology DSN 366-8724 COMM (302) 346-8742

U.S. Army Combat Readiness Center (<https://safety.army.mil>)

Emergency Only DSN 558-3410/2660
COMM 334-255-3410 / 2660

Routine DSN 558-4510/3490
COMM 334-255-4510 / 3490

Surgeon DSN 558-2763
COMM 334-255-2763

U.S. Army Aeromedical Research Laboratory
(<http://www.usaarl.army.mil>)

ALSERP POC DSN 558-6920
COMM 334-255-6920



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