

NATO STANDARD

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**AEROMEDICAL ASPECTS OF
AIRCRAFT ACCIDENT AND INCIDENT
INVESTIGATION**

Edition B Version 1

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NORTH ATLANTIC TREATY ORGANIZATION

ALLIED AEROMEDICAL PUBLICATION

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26 November 2018

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Brigadier General, HUNAF
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CHAPTER 1 INTRODUCTION

1.1 AIM

The aim of this standard is to standardize the essential points to be covered in the aeromedical investigation of accidents and/or incidents in order to facilitate the exchange of comparable information between nations.

1.2 GENERAL

1. This standard requires the following:
 - a. A medical officer, preferably with specialist aeromedical qualifications, will participate, when possible, in the investigation of all aviation accidents and/or aeromedical incidents as aeromedical adviser to or as a full member of any Aircraft Accident and Incident Investigation Board established.
 - b. The aeromedical member of the investigation board will be responsible for obtaining medical information in accordance with current national regulations.
 - c. In the case of fatal accidents, the legal custodian of the bodies will be requested to facilitate the performance of autopsies on all fatalities to ascertain the causes of all injuries and their chronological sequence. Ideally all autopsies should be performed or observed by a specialist in forensic medicine and trained in aviation pathology and should include as appropriate histological, biochemical, toxicological, radiological and other special investigations. This pathologist can be either a civilian or service medical officer. When a decision has been made to perform an autopsy, the aeromedical Board member or adviser will assist the pathologist in problems of an aeromedical nature. Whilst every effort should be made by the investigating aeromedical officer to obtain an autopsy in a fatal accident, it will be necessary to adhere to the national and local medico-legal policy.

- d. After the necessary life-saving and fire-fighting actions have been taken, the police and other authorities will be requested to secure the scene of the accident until the Board has finished its on-site investigations. Photographs, drawings and maps must be made as soon as possible, showing positions and condition of those involved in the accident. If for technical or social reasons the wreckage has to be moved, all the necessary information will have been obtained. Personal effects, clothing and flight/protective equipment remaining on any part of a body should be retained in position on the body and should not be removed, in order to facilitate positive identification and to aid the investigation, until after the steps in Para 3 f have been completed. Careful notes must be taken of any necessary alterations made to the wreckage and equipment. Evidence from witnesses will be taken as early as possible, to avoid collusion.
- e. The aeromedical member or adviser will, if required, carry out an examination of identification data such as colour of hair and iris, finger and footprints, scars, dental identification, etc., of the deceased.
- f. The aeromedical member or adviser will conduct a full examination of clothing and of personal and safety equipment to correlate damage noted with injury causation or prevention (see Annex A, Part III). Survivors and fatalities will be examined and this will include, if possible, appropriate X-ray examination and colour photographs. X-rays of feet and hands of a dead body may lead to accurate determination of who was on the controls at the time of impact.
- g. The information gathered from the aeromedical examination reports, external examination and autopsy must be related to the magnitude and direction of damaging forces and assessed with the information obtained from the damage sustained by aircraft structures, seats, etc., caused by fire, explosion, impact forces, etc
- h. There will be close cooperation between the aeromedical member or adviser and other members of the Aircraft Accident and Incident Investigation Board, in order to find the correct sequence of factors leading up to the accident or incident, causing the accident or incident and resulting in the final damage.
- i. The aeromedical member or adviser will be aware that a variety of human factors including the recent physical and mental health of individuals involved in the accident or incident may lead to a better understanding of the problems involved. The advice of human factors specialists should be sought if needed, during the aeromedical investigation of an accident or incident.

- j. Guides to the minimum amount of data to be collected by the Aircraft Accident and Incident Investigation Board investigating accidents and/or aeromedical incidents are attached as Annexes A and B. Annex A also contains an Appendix A considering damaged helmets.

1.3 DEFINITIONS

- a. Aeromedical incident is defined as “an occurrence in which the safety of the flight or completion of the mission was compromised due to medical reason”.
- b. Aircraft accident is defined as “any occurrence that causes damage and/or injuries, due to the use of an aircraft in flight, or with the intention of performing a flight, or repositioning the aircraft on the ground with use of the aircraft’s engine(s). Starting at the moment a person comes on board with the intention of one of the above until all persons on board with the same intention have left the aircraft”.

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<p>ANNEX A GUIDE TO MINIMUM AEROMEDICAL INFORMATION TO BE RECORDED IN CASE OF AN AIRCRAFT ACCIDENT</p>
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1.A.1 PART I - GENERAL INFORMATION

(To be completed for each accident as applicable)

1. The Aircraft:
 - a. aircraft type and mark;
 - b. aircraft serial number;
 - c. parent unit of aircraft;
 - d. time flown since last major engineering service;
 - e. any abnormality in flight previous to that in which accident occurred.

2. The flight:
 - a. Purpose of flight;
 - b. Pre-flight briefing (adequacy, time and length);
 - c. Time of take off;
 - d. Brief description of flight with any discrepancies between planned and actual flight.

3. The accident:
 - a. Date and time;
 - b. Place;
 - c. Phase of flight (taxiing/take off/in flight/approach/landing);
 - d. Photographs of accident, site, wreckage and damage, etc.

4. Physical conditions at time and site of accident:
 - a. Level of illumination (day/night/dawn/dusk);
 - b. Visibility;
 - c. Cloud cover;
 - d. Precipitation;
 - e. Surface wind (including upper wind velocity);
 - f. Temperature and Humidity;
 - g. External conditions (terrain, blowing snow, blowing dust or sand).

5. Summary of information concerning occupants of aircraft. Record for each individual occupant in the aircraft:

- a. Name;
- b. Rank and Number;
- c. Age and Sex;
- d. Crew duty;
- e. Position in aircraft;
- f. Medical condition as a result of the accident:
 - (1) Uninjured;
 - (2) Injured (slight, moderate, severe);
 - (3) Killed during accident (incinerated/not incinerated);
 - (4) Survived accident but died subsequently (seen/not seen before death);
 - (5) Missing.

6. Information relating to the in-flight phase of the emergency. (To be completed for all accidents except those, which occur prior to the beginning of take off):

- a. Nature of the emergency:
 - (1) Collision with ground/sea/obstacle;
 - (2) Emergency in flight;
 - (3) Mid-air collision;
 - (4) Other or unknown;
- b. Operating conditions at time of the emergency:
 - (1) Aircraft control (solo/dual/auto pilot);
 - (2) Single/Formation (leader/number) flight;
 - (3) Form of ground control,
- c. Cause of the emergency (structural failure/collision/fire/lack of fuel/loss of control/failure of power/loss of auxiliary systems/other);
- d. Flight path (altitude, speed and attitude) immediately before and during the emergency;
- e. Abandonment in flight. The manner of the abandonment (assisted/unassisted) and its success are to be recorded in summary form for each individual in the aircraft. (The details of each individual abandonment are recorded elsewhere - Part II).

7. Information relating to crash or emergency landing. (To be completed only if aircraft was occupied at moment of impact with the ground):
- a. Seating. Record for each individual airman and passenger in the aircraft prior to the accident:
 - (1) Type (manufacturer and mark) and orientation (to line of flight) of seat;
 - (2) Position of seat pan and seat back;
 - (3) Type of restraint harness;
 - (4) Type of quick release fitting;
 - (5) Type of personal survival pack;
 - (6) Weight setting of the seat (appropriate for occupant);
 - (7) Survival / personal equipment (e.g. helmet, Nomex, etc.);
 - b. Actions prior to ground impact:
 - (1) Time between onset of emergency and realization that crash was inevitable;
 - (2) Nature and time of warning to aircraft occupants that impact would occur;
 - (3) Stowing and securing of loose items;
 - (4) Seat harness (fastened or unfastened/degree of adjustment);
 - (5) "Go Forward" lever (locked/unlocked) = seat belt lever;
 - c. The impact;
 - (1) Obstructions on approach;
 - (2) Surface onto which impact occurred (type, contour, obstruction);
 - (3) Details of impact (attitude, forward and vertical speed and angle at impact, estimated deceleration, secondary impact, damage to aircraft);
 - (4) Details of crash site;
 - d. The effect of impact. Record for each individual occupant of the aircraft at impact:
 - (1) Damage to seat;
 - (2) Restraint harness (adjustment, damage);
 - (3) Operation of quick release fitting (ease of opening by normal means, inadvertent operation);
 - (4) Escape from aircraft (escape route, ease of escape, cause of difficulties);

- (5) Operation of the seat (effectiveness at absorbing energy).
- 8. Information relating to ditching and escape from aircraft in water. (To be completed only if aircraft was occupied at moment of impact with water):
 - a. Seating as for 7.a.;
 - b. Actions prior to water impact as for 7.b.;
 - c. The impact:
 - (1) Obstructions on approach;
 - (2) Sea state (Beaufort scale, surface wind speed, direction and wave height);
 - (3) Details of impact (attitude, heading of aircraft, forward and vertical speed, and angle at impact, estimated deceleration, secondary impact, damage to aircraft, aircraft sink rate, fire and smoke);
 - d. The effect of impact as for 7.d.

1.A.2 PART II – ESCAPE IN FLIGHT

II (a) – EJECTION OR ATTEMPTED EJECTION

- 1. Escape system:
 - a. Escape path clearance system;
 - b. Ejection seat (type and Mark, serial number, modification status);
 - c. Personal survival pack.
- 2. Action before initiation:
 - a. Radio call;
 - b. Delay to allow other individual to escape;
 - c. Adjustment of posture, harness and personal equipment;
 - d. Lapsed time from decision that ejection was required to initiation.
- 3. Aircraft state at initiation:
 - a. Control (under control/not under control);
 - b. Speed, attitude, altitude, acceleration and deceleration.
- 4. Initiation of ejection:
 - a. Method (handle, hand(s) used, command by pilot him- or herself/commanded by other pilot/sequenced, inadvertent, impact, automatic or manual personal survival pack lowering system);

- b. Difficulty in initiation (reach/location/adequacy of pull).
- 5. Clearance of ejection path:
 - a. Method of clearance (canopy jettison (manual, automatic)/through canopy/miniature detonating cord);
 - b. Injury attributable to clearance of path (by canopy fragments, lead particles).
- 6. Ejection from aircraft:
 - a. Injury due to acceleration of ejection;
 - b. Injury due to contact with aircraft (within or outside cockpit);
 - c. Effectiveness of trunk and limb restraint systems;
 - d. Injury due to air blast (head and limb flailing);
 - e. Behavior of personal equipment during ejection phase (loss, damage).
- 7. Separation from aircraft to separation from seat:
 - a. Stability of man-seat combination (stable, tumbling, swinging, rotating);
 - b. Injury attributable to instability of man-seat combination;
 - c. Man-seat separation (altitude and speed, automatic or manual);
 - d. Injury attributable to man-seat separation;
 - e. Behavior of personal equipment whilst in seat (loss, damage).
- 8. Deployment of main parachute:
 - a. Deployment (normal/nature of abnormality/damage to parachute, harness);
 - b. Injury attributable to extraction and deployment;
 - c. Behavior of personal equipment during deployment of main parachute.

II (b) – UNASSISTED ESCAPE

- 9. Escape system:
 - a. Escape path clearance (door, hatch/manual, automatic);
 - b. Static seat (position and type, harness system);
 - c. Personal survival pack.

10. Action before initiation:
 - a. State of personal equipment (oxygen mask and supply, radio transmission devices);
 - b. Position in aircraft when emergency declared;
 - c. Order to abandon (ordered/own initiative).
11. Aircraft state during abandonment:
 - a. Control (under control or not);
 - b. Speed, attitude, altitude, acceleration forces.
12. Abandonment:
 - a. Clearance of escape path (self/other);
 - b. Movement to seat and to escape hatch (ease of movement, obstructions);
 - c. Emergence from aircraft (difficulty in leaving);
 - d. Injury attributable to abandonment (on moving to seat, to escape hatch, on emergence into airstream).
13. Deployment of parachute:
 - a. Method (static line, automatic, manual);
 - b. Mode of deployment (normal/nature of abnormality/damage to parachute, harness);
 - c. Injury attributable to deployment.

II (c) - PARACHUTE DESCENT

(To be completed for both ejection and unassisted escape)

14. Previous parachuting experience
15. Parachute harness:
 - a. Type;
 - b. Damage;
 - c. Attitude suspended below parachute;
 - d. Discomfort from harness.

16. Stability of parachute-man complex:
 - a. Occurrence of oscillation;
 - b. Factors precipitating oscillation;
 - c. Action taken to reduce oscillation.
17. Post parachute deployment drill:
 - a. Personal Survival Pack and lanyard (checks, lower, discard);
 - b. Oxygen mask and protective helmet (lowered, discarded);
 - c. Life preserver (inflation);
 - d. Preparation of parachute release fittings (unlocked quick release fitting).
18. Collision during descent:
 - a. Object collided with (parachutist, seat, overhead cables, trees).
19. Surface impact:
 - a. Nature of surface:
 - (1) Land (inclination, nature and hardness of surface, obstructions);
 - (2) Water (Beaufort scale, wave height, temperature, presence of ice);
 - b. Surface wind (direction and velocity);
 - c. Steering of parachute (by risers, by specific device);
 - d. Vertical and horizontal speeds at impact;
 - e. Injuries attributable to impact.
20. Post impact behavior:
 - a. Dragging after impact (speed, duration, cause of stop of dragging);
 - b. Release of parachute (ease of reach and operation of parachute release);
 - c. Entanglement in parachute harness (nature of entanglement and difficulty in freeing from parachute);
 - d. Life preserver:
 - (1) Method of inflation (manual/automatic);
 - (2) Time of inflation in relation to water impact;
 - (3) Effectiveness of life preserver (attitude in water);
 - e. Damage to personal equipment (by landing impact/dragging).

II (d) - SURVIVAL - RESCUE AND RECOVERY

21. Land Survival:

- a. Surface (type of terrain, surface wind, temperature and precipitation);
- b. Previous experience of survival (practice/real);
- c. Mobility of airman;
- d. Location aids (list each available, those used and effectiveness of each);
- e. Shelter and protection (nature and effectiveness);
- f. Food and water (availability and consumption);
- g. Contact with rescuers (method and time).

22. Sea Survival:

- a. Sea state (Beaufort scale, temperature and surface wind);
- b. Previous experience of sea survival (practice/real);
- c. Life preserver (remained inflated/required topping up);
- d. Personal Survival Pack (retained/lost, flotation, opening, use of contents);
- e. Life raft:
 - (1) Inflation (manual/automatic, effective/deficient);
 - (2) Re inflation required;
 - (3) Boarding (time in sea before boarding, case of boarding);
 - (4) Bailing out water (amount and frequency);
 - (5) Apron or canopy (time erected, inflated);
 - (6) Floor inflated (time, means);
- f. Location aids (list each available, and use and effectiveness of each);
- g. Food and water (availability and consumption);
- h. Contact with rescuers (method and time).

23. Rescue and recovery:

- a. Position and time when rescued (location of survivor);
- b. Method of rescue (own efforts, rescue service involved and mode of rescue);
- c. Difficulties.

1.A.3 PART III - BEHAVIOUR OF PERSONAL EQUIPMENT

(To be completed for each individual involved in the accident)

1. Record the personal equipment worn, whether it was effective and, if not, why not. Document any evidence which shows that the equipment was either protective or caused injuries. Record whether it was recovered or not and whether it was intact or damaged. This information should include the following components of the aircrew personal flying equipment:

- a. Protective helmet;
- b. Helmet mounted systems;
- c. Visor system;
- d. Oxygen equipment (mask, man mounted regulator, personal hose assembly);
- e. Boom/throat microphone;
- f. Corrective flying spectacles;
- g. Anti-G suit;
- h. Contact lenses;
- i. Underwear;
- j. Thermal insulative garment;
- k. Thermal conditioning garment (air, liquid or electrical);
- l. Coverall (flying, immersion (ventile/non-ventile) combat suit);
- m. Socks and gloves
- n. Flying boots;
- o. Life preserver/Survival aids waistcoat;
- p. NBC protective clothing and respirator;
- q. Personal body armour;
- r. Personal weapon;
- s. Body mounted harness system;
- t. NVG automatic or manual separation system;
- u. Leg restraint garters and lines;
- v. Arm restraint lines;
- w. Chest counter pressure garment.

1.A.4 PART IV – INDIVIDUAL INFORMATION

(To be completed for each individual involved in accident)

1. Personal information:

a. Identification:

- (1) Name;
- (2) Rank;
- (3) Age;
- (4) Sex;
- (5) Crew position;
- (6) Qualifications;
- (7) Marital status;
- (8) Family and interpersonal relationship;
- (9) Financial problems;
- (10) Non-aviation related activities;
- (11) Experience and flying time on accident aircraft type;
- (12) Mission experience;
- (13) Performance level;
- (14) Assessment of flying skills (obtained from flying records);
- (15) Medical category (including date awarded);
- (16) Review of medical records and other relevant medical history;

b. Anthropometry (data eventually obtained from existing records):

- (1) Height;
- (2) Weight;
- (3) Sitting height;
- (4) Buttock-knee length;
- (5) Shoulder breadth;
- (6) Functional reach;
- (7) Buttock-heel length;
- (8) Hand dominance;

- c. Physiological:
 - (1) Sensory or perceptual limitations;
 - (2) Boredom;
 - (3) Fatigue and perturbation of circadian rhythms;
 - (4) History of airsickness;
 - (5) Acceleration tolerance;
 - (6) Somatic - sensory illusions;
 - (7) Sudden incapacitation;
 - (8) Physical fitness;
 - (9) Thermal stress;
- d. Psychological (information obtained by psychologist if necessary):
 - (1) Personality development;
 - (2) Professional difficulties;
 - (3) Professional dissatisfaction;
 - (4) Past experiences including previous accident/mishap history;
 - (5) Stress;
 - (6) Ambition;
 - (7) Attitudes to authority;
 - (8) Emotional stability;
 - (9) Personality profile;
 - (10) Judgement;
 - (11) Situational awareness (disorientation);
 - (12) Reaction to emergency;
 - (13) History of consumption of alcohol or drugs (legal or not);
 - (14) Physical/mental task/workload over saturation;
- e. Activity prior to accident:
 - (1) Brief account of activity in 48 Hr prior to the accident;
 - (2) Work / rest history;
 - (3) Food intake;
 - (4) Recent illness;
 - (5) Therapeutic drugs;
 - (6) Ingestion of alcohol or legal/illegal drugs;

- (7) use of fatigue countermeasure drugs;
- (8) use of non-pharmacological fatigue countermeasures;
- (9) Quality of recent sleep patterns during previous 72 hr;
- f. Training and Currency:
 - (1) Flying hours (total, instrument flight, night, NVG, etc.);
 - (2) Aeromedical (date last given, scope, spatial disorientation training, etc.);
 - (3) Survival;
 - (4) Underwater escape including EUBA (= emergency underwater breathing apparatus);
 - (5) CRM (= cockpit resource management) training received.
- 2. Organizational:
 - a. General:
 - (1) Operational organization;
 - (2) Selection and training;
 - (3) Mission demands;
 - (4) Flight procedures;
 - (5) Management;
 - b. Psychosocial (information obtained by psychologist if necessary):
 - (1) Crew composition;
 - (2) Leadership and communication.
- 3. Engineering:
 - a. Cockpit ergonomics;
 - b. Instrumentation;
 - c. Cockpit displays;
 - d. Use of NVG and other helmet mounted systems.
- 4. Environmental:
 - a. Weather related factors;
 - b. Temperature related factors;
 - c. Noise;
 - d. Vibration;
 - e. Radiation and environmental hazards;
 - f. Speed related factors;

- g. Geographical;
 - h. Air traffic control factors.
5. Post-accident survival. Human aspects of problems related to:
- a. Injury;
 - b. Escape sequence;
 - c. Ejection;
 - d. Ground egress survival training;
 - e. Rescue.

1.A.5 PART V – INJURIES

(To be completed for each individual occupant injured in the accident)

1. External:
 - a. Burns (site and degree, pre or post mortem, cause);
 - b. Hemorrhage (site and degree), abrasions, bruises, cuts, lacerations, belt marks;
 - c. Shock (cause);
 - d. Loss of consciousness (duration, time, period of retrograde amnesia, time of post traumatic amnesia);
 - e. Result of external examination (form and extent of injury to be recorded in table and on diagrams of surface of the body, including photographs).
2. Skeletal. Site and extent of injury to bony skeleton and joints to be recorded in table and on suitable diagrams of the skeletal system. X-ray photographs, computerized tomography, magnetic resonance imaging and radioisotope scans should be included if possible and needed. An MRI scan of the spine is recommended.
3. Internal injuries. Site, intensity and outcome of each internal injury to be recorded.
4. Cause of injuries. Mechanism considered to be involved in production of each injury is to be recorded.
5. Disposition. Whether alive or dead when first seen. If alive place of medical treatment.
6. Fatality. Record time, date and cause of death.

1.A.6 PART VI - AUTOPSY REPORT

(To be completed for each individual who died as a result of the accident)

1. Aircraft involved:
 - a. Aircraft type and mark;
 - b. Aircraft serial number.
2. Personal particulars:
 - a. Name;
 - b. Number and rank;
 - c. Position in aircraft.
3. Dates and times:
 - a. Date and time of accident;
 - b. Date and time of death;
 - c. Date and time of autopsy;
 - d. Names of pathologist and observers.
4. Place of autopsy
5. Condition of body at autopsy
6. External distinguishing features and means of identification
7. Traumatic lesions. External injuries, soft-tissue injuries, bone fractures and luxation (of joints).
8. State of individual organs:
 - a. Record state of and damage to each of the organs including:
 - b. Brain - Spinal Cord;
 - c. Eyes;
 - d. Middle ear;
 - e. Mouth including teeth (dental identification);
 - f. Glottis, Tonsils;
 - g. Pleural space, Mediastinum;
 - h. Trachea and Bronchi, Lungs;
 - i. Pericardium, Heart and great vessels (including coronary arteries);
 - j. Diaphragm;
 - k. Peritoneal cavity, Mesentery;
 - l. Esophagus, Stomach, Intestines, Appendix;

- m. Liver - Gall bladder, Spleen, Pancreas;
 - n. Kidneys, Adrenal glands;
 - o. Pelvic organs, Genitalia;
 - p. Thyroid;
 - q. Pituitary.
9. Pre-existing disease.
10. Causation of injuries.
11. Results of toxicological examination. (e.g. peripheral/femoral venous blood; central venous blood; urine; stomach contents; vitreous humour; tissue from brain, lung, kidney and liver; muscle and fat tissue).
12. Results of histological study.
13. Cause of death. Specify disease or condition directly leading to death, antecedent causes and morbid conditions and any other condition contributing to death.

Remarks by pathologist

**1.A.7 PART VII - REMARKS AND RECOMMENDATIONS OF SPECIALIST
MEDICAL OFFICERS**

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APPENDIX 1	INFORMATION REQUIRED FOR DAMAGED HELMETS
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1. The following specific data in the following sequence is required to facilitate the exchange of comparable information between nations:

a. Helmet:

- (1) Serial number for future reference. Detailed information. Evidence of retention and configuration, chinstrap, mask and visor position, etc.;
- (2) Type and size of helmet, degree of fit, special modifications;
- (3) Photographic recording. Full coverage of shell;
- (4) Details of specific areas;
- (5) Full description of helmet damage:
 - (a) Shell and visor;
 - (b) Lining/suspension tapes;
 - (c) Neck strap/break links;
 - (d) associated equipment - oxygen mask, ear protectors, NVG system, NVG face protection visor, helmet-mounted systems;
- (6) Estimated length of time helmet was in use;

b. Accident and/or Incident:

- (1) Date;
- (2) Ejection/crash/mid-air collision/other incidents causing damage;
- (3) Brief summary of incident containing all the information relevant to head impact, to include speed and attitude;
- (4) Pre-incident position of the visor (raised or lowered);
- (5) Description of any objects known or thought to have been struck by the head (canopy, instruments, ground, escape system, etc.);
- (6) Windblast. Details if loss or movement of helmet is applicable;

c. Head Injury:

- (1) Any evidence of superficial/skull/brain injury with sites;
- (2) Copies of pathology report, X-rays, etc. as appropriate;
- (3) Any evidence of concussion (or confusion);
- (4) Follow-up. Return to flying;
- (5) In fatal cases, was head injury the cause of death?

- d. Correlation of Head Injury with Helmet Damage;
 - e. Simulation of Impact Damage to Helmet to Define:
 - (1) Kinetic energy of impact (joules);
 - (2) Probable impactor;
 - (3) Probable level of transmitted force;
 - f. Correlation of Head Injury with Impact Data;
 - g. Assessment of Part Helmet Played in Incident.
2. Where possible, all helmets damaged in service should be sent to the appropriate authority responsible for review and analysis of helmet data.

ANNEX B GUDE TO MINIMUM INFORMATION TO BE RECORDED IN CASE OF AN AEROMEDICAL INCIDENT DURING AIRCRAFT OPERATIONS
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SECTION A: Information concerning aircraft and sortie

1. Aircraft type and mark
2. Identification letters/numbers
3. Nationality.
4. Date of flight on which incident occurred
5. Type of sortie
6. Stage of mission
7. Usual air base
8. Base from which aircraft took-off (if different from 7)
9. Time of reporting for duty
10. Time of take-off
11. Weather conditions
12. Visibility
13. Time of landing

SECTION B: Information concerning the individual involved

1. Service number
2. Rank, Names
3. Nationality
4. Age and Sex
5. Weight, Height, Build
6. Marital status
7. Living accommodation (mess, quarter, etc.)
8. Aircrew category (pilot, navigator, etc.)
9. Crew position at time of incident (captain, co-pilot, etc) and duty performed at time of incident (e.g. whether actually in control of the aircraft)
10. Medical category
11. Total number of flying hours
12. Number of hours on type
13. Time and type of meal taken before incident
14. Smoking habits

15. Presence of intercurrent infection
16. Therapeutic drugs taken over previous 72 Hrs
17. use of fatigue countermeasure drugs
18. use of non-pharmacological fatigue countermeasures
19. Sleep pattern over previous 72 Hrs
20. Last leave period
21. Unusual pattern of activities for previous 72 Hrs
22. Alcohol consumption within previous 72 Hrs
23. Any known domestic/occupational mental stress
24. Previous accidents/incidents
25. Previous aviation physiology training:
 - a. - date
 - b. - place
 - c. - type of course
26. Excursion underwater wearing SCUBA within 24 Hrs

SECTION C: Details of in-flight incident

1. Time into sortie when incident occurred and stage of mission
2. Nature of first symptom(s) experienced
3. Time course of subsequent symptoms
4. Duration of symptoms
5. Action taken to report symptoms
6. Actions taken to overcome symptoms
7. Aircraft altitude when incident occurred
8. Cabin altitude when incident occurred
9. Attitude of aircraft when incident occurred (level flight, ascending, descending, turning, aerobatics)
10. Presence of vibration
11. Type of oxygen system installed in aircraft
12. Type and size of oxygen mask worn
13. Personal flying clothing assembly worn
14. Oxygen contents at time of incident
15. Normal operation of magnetic indicators
16. Difficulty breathing either in or out

17. Noticeable change in rate or depth of breathing
18. Change in pressure delivered by oxygen system
19. Visual disturbance
20. Tremor or uncoordination of limbs
21. Difficulty in mental concentration
22. Change in hearing acuity
23. Tingling in hands, feet, lips
24. Presence of nausea
25. Headache
26. Pain or discomfort in any anatomical site:
 - a. joints
 - b. abdomen
 - c. chest
 - d. ear (R or L)
 - e. sinuses (frontal/maxillary)
27. Mental state at time of incident (relaxed/tensed)
28. Thermal comfort (hot - cold)
29. Unusual smell/smoke etc.

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