Department of the Army
Pamphlet 385–40

Safety

Army Accident Investigation and Reporting

Headquarters
Department of the Army
Washington, DC
1 November 1994

Unclassified

SUMMARY of CHANGE

DA PAM 385–40
Army Accident Investigation and Reporting

This new Department of the Army pamphlet--

- Contains information for all accident investigation and reporting, not solely for aviation accidents.
- Contains information on generic accident investigation techniques and procedures (chap 2).
- Revises the DA 2397 Series aircraft accident investigation forms, with accompanying instructions (chap 3).
- Adds DA Form 2397-AB-R, Abbreviated Aviation Accident Report (AAAR), with instructions (chap 3).
- Includes DA Form 285, Army Accident Report, with supporting forms and detailed instructions (chap 4).
- Adds DA Form 285-AB-R, Abbreviated Ground Accident Report (AGAR) with instructions (chap 4).

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Army Accident Investigation and Reporting

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:

MILTON H. HAMILTON
Administrative Assistant to the Secretary of the Army

History. This UPDATE printing publishes a new Department of the Army pamphlet. This publication has been reorganized to make it compatible with the Army publishing database. No content has been changed.

Summary. This pamphlet on accident investigation and reporting for the Army has been expanded to encompass all Army accidents, to include aviation, ground, explosives, nuclear, radiation, biological, and maritime. This pamphlet implements compliance procedures for Department of Defense Instructions 6055.7, 7730.12, and AR 385–40.

Applicability. This regulation applies to the Active Army, the Army National Guard, the U.S. Army Reserve, and Army appropriated fund employees. This pamphlet is applicable during full mobilization.

Proponent and exception authority. The proponent of this pamphlet is the Director of Army Safety, under the Office, Chief of Staff, Army. The proponent has the authority to approve exceptions to this pamphlet that are consistent with controlling law and regulation. Proponents may delegate this approval authority, in writing, to a division chief under their supervision within the proponent agency who holds the grade of colonel or the civilian equivalent.

Interim changes. Interim changes to this pamphlet are not official unless they are authenticated by the Administrative Assistant to the Secretary of the Army. Users will destroy interim changes on their expiration date unless sooner superseded or rescinded.

Suggested Improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to Army Safety Office, DACS–SF, Chief of Staff, 200 Army Pentagon, Washington, DC 20310–0200.

Distribution. Distribution of this publication is made in accordance with DA Form 12–09–E, block number 4496 intended for command levels A, B, C, D, and E for the Active Army, the Army National Guard, and the U.S. Army Reserve.

Contents (Listed by paragraph and page number)

*This pamphlet supersedes DA Pam 385–95, 20 May 1991.

Unclassified

Appendixes

Table List

Figure List

Contents—Continued

RESERVED

Chapter 1
Introduction

1–1. Purpose
This pamphlet provides implementing instructions for the investigation and reporting of Army accidents, as directed by AR 385–40.

1–2. References
Required and related publications and prescribed and referenced forms are listed in appendix A.

1–3. Explanation of abbreviations and terms
Abbreviations and special terms used in this pamphlet are explained in the glossary. Special terms imperative to the understanding of this pamphlet are listed in section III of the glossary.

1–4. Methodology
Accidents resulting in the damage or destruction of Army resources or personnel injury/death impair the combat readiness of the United States Army. Initiation of the accident investigation will be according to AR 385–40, paragraph 1–9. Selected Class A and B accidents will be investigated by the U.S. Army Safety Center (USASC) under the following guidelines:

a. Accidents should be investigated to the degree necessary to identify the immediate mistake(s)/error(s)/failure(s), and system inadequacy(ies) which may have caused, or contributed to, the accident being investigated. The techniques and procedures contained in this pamphlet will be used as a guide according to AR 385–40. Appropriate forms (DA Form 2397 Series/DA Form 2397–AB–R/ DA Form 285/DA Form 285–AB–R) will be used for reporting the results of accident investigations.

b. Recommendations will be provided that will remedy the causes and minimize the chances for similar recurrences. If the Army accident investigation reveals unsafe conditions or practices affecting an item of equipment or technical publication, the safety of an entire model or series of an Army item of equipment may be involved. The appropriate commander should be notified immediately; and the program/product manager (PM) as well as USASC contacted telephonically. The PM is responsible for analyzing the defect or deficiency and issuing safety messages deemed appropriate.

1–5. Concept
Accidents are caused by adverse interactions of man, machine and environment. Investigation and assessment of these elements should reveal human, materiel, and/or environmental factors that caused or contributed to the accident. These factors can usually be attributed to one or more system inadequacy. These deficiencies are usually attributable to leader, standard, training, individual, or support failure. Although an accident investigation occurs "after the fact," its primary focus must be on identifying what happened and why it happened. Once this has been accomplished, the appropriate activity(s) responsible for correcting each identified system inadequacy can be notified. This procedure is called the "3W" approach to information collection, analysis and remedial measures (fig 1–1). The procedures used throughout this pamphlet are designed to assist the investigator in answering the following three basic questions:

a. What happened (mistake/error). Identify key factors (human, materiel, environmental) which caused or contributed to the accident. In the case of injuries, explain how they happened.

b. Why it happen (system inadequacy(ies)/root causes(s)). Identify the system inadequacy that permitted the accident to occur. Explain how and under what conditions those errors/failures occurred.

c. What to do about it (recommendations). Identify the recommended actions and identify the proponent activity or lowest level of command that is most responsible for correcting the deficiency.

1–6. Safeguarding accident information
All accident data/information will be safeguarded according to AR 385–40, paragraph 1–10. Limited use is the designation for all aircraft accidents and other accidents involving selected complex weapon systems, equipment, or military unique items/operations (for example, guided missiles, rockets, strategic defense system components, armored vehicles, and so forth). All other reports not designated as "Limited Use" are labeled "General Use Accident Reports."

1–7. Use of forms and reports
The report of an Army accident investigation, citing findings and recommendations, will be completed using the appropriate forms prescribed in AR 385–40. Additional attachments, drawings, extracts, or other supportive media are permitted if the investigation board president determines they are needed to support the findings, recommendations, and analysis. Detailed instructions for preparation and completion of these forms are contained in chapters 3 and 4 of this pamphlet.

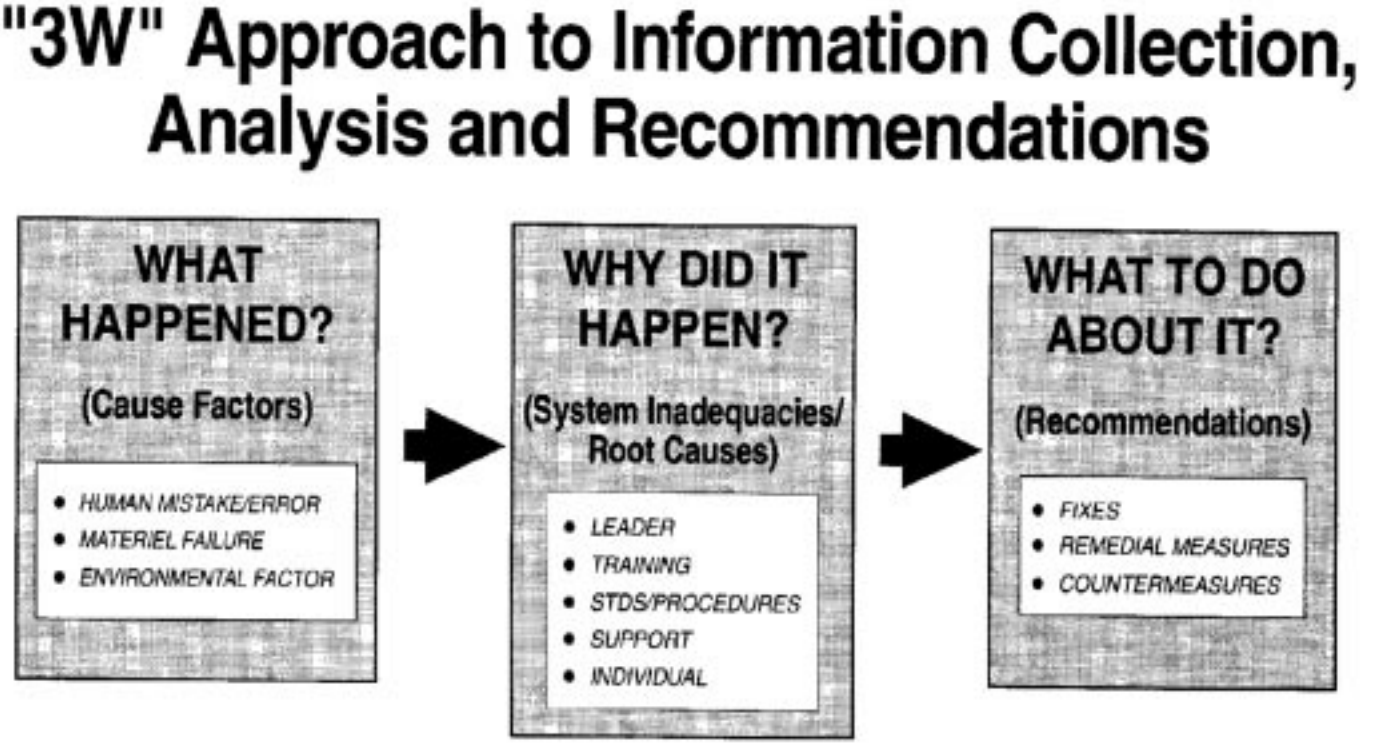


Figure 1-1. 3W approach to the investigation, analysis, and prevention of accidents

Chapter 2
Investigation Procedures and Techniques

Section I
Procedures

2–1. Organization and planning

a. Introduction. The successful accomplishment of an accident investigation will depend upon how well it is planned, organized, and conducted. The investigating officer/board president is responsible for organizing and directing the efforts toward a thorough and comprehensive investigation. The board will be established according to AR 385–40, paragraph 4–2.

b. Investigation plan. The investigation plan is a systematic procedure that will ensure continuity of effort from the preliminary examination of the accident site to the submission of the final report. The plan is divided into four phases; organization and preliminary examination, data collection, analysis of the data, and completing the technical report.

(1) *Phase 1—Organization and preliminary examination.* This phase provides the opportunity for the board president to organize the board for the investigation. This should be accomplished in a board meeting before departing for the accident scene. This meeting should ensure that every board member understands the areas of the investigation for which they are responsible, the initial tasks to be accomplished and the data elements to be collected to complete the report. The board should also be briefed by the unit/installation safety director/officer on the status of preliminary actions. Once the board arrives at the accident site, members of the board should make a preliminary examination of the accident site to get a "mental picture" of the physical layout as an early step in their individual tasks. However, caution must be used to ensure the site, to include ground scars/marks, is not disturbed. This orientation will usually require less than 30 minutes. If the board cannot arrive at the scene with adequate daylight remaining, the preliminary examination should be delayed until the following morning.

(2) *Phase 2—Data collection.* Human, materiel, and environmental factors are interrelated as each influence the performance of man and machine. Divide data collection into the following areas:

(a) Human factors. Human factors are primarily concerned with gathering data necessary to evaluate the job performance of all personnel who influenced the operation which resulted in the accident. The sources of this information may include, but are not limited to: personnel involved, witnesses, supervisors, peers, and personnel from operations, training and maintenance; individual records, to include training, qualification, personnel, and/or medical records; data for the evaluation of the command influence, such as unit policy for risk management, mission briefings, crew rest/sleep (both long and short term), utilization of personnel, and driver selection/ training; data for evaluation of the structure/system/equipment crashworthiness, personnel restraint systems, and personal protective clothing and equipment as related to injury causation or prevention; and data for the evaluation and reporting of problems encountered in egress, survival, and rescue. Environmental data must also be collected for evaluation of its impact or influence on the performance of the involved individuals.

(b) Materiel factors. Materiel factors is primarily concerned with gathering data necessary to evaluate the performance of the vehicle, buildings, ground support equipment, land/or other support materiel. Some sources for this information are the equipment historical, modification and inspection records, fluid analysis, teardown analysis, wreckage distribution, photographs and the failed part. Also, equipment project managers (PM), manufacture, equipment operators, and maintenance personnel are excellent sources of materiel data. Also, data concerning how environmental conditions have affected vehicle/system/equipment performance must be acquired.

(c) Environmental factors. Collection of environmental evidence is simultaneous and inclusive with the human and materiel factors evidence collection. Paragraph 2–6 of this chapter is devoted to environmental factors investigation.

(3) *Phase 3—Analysis of data.* The analysis function is an ongoing process throughout the data collection phase. Conclusions derived from the analysis will be the basis for developing findings and

recommendations. The analysis should be thorough and should focus on determining why the accident occurred. This should drive the analytical effort throughout the investigation so that findings and recommendations can be developed that have the best potential for preventing similar accidents. Paragraph 2–8 of this chapter addresses accident data analysis in greater detail.

(4) *Phase 4—Completing the technical report.* In this phase, the board must ensure that all relevant evidence gathered is carefully recorded. It is not unusual for some of the evidence to be contradictory. Contradictory evidence will be discussed and resolved to the extent possible in the analysis.

c. Duties. Accident investigation boards will be established according to AR 385–40. In some cases, the board will consist of one individual. That individual is responsible for all aspects of the investigation and report processing. When more than one individual is appointed to an investigation board, a board president and recorder will be designated. Other technical advisors, equipment operators, support personnel, and so forth, necessary to conduct the investigation will be made available to the board, regardless of its composition.

(1) *Board president.* The duties of the president of an accident investigation board include, but are not limited to, the following:

(a) Managing the investigation according to AR 385–40.

(b) Convening the board at the earliest possible time after notification that an accident is to be investigated.

(c) Organizing the board and assigning areas of investigative responsibility to each member.

(d) Taking control of the accident site upon arrival and after the area is declared safe for entry by rescue, explosive ordnance disposal (EOD), chemical, and firefighting personnel.

(e) Verifying that adequate guards are on site to ensure the preservation and protection of evidence, to include site, equipment, separated parts, impact scars, and so forth, resulting from the accident.

(f) Coordinating for all required investigating equipment necessary to conduct the investigation.

(g) Dispatching members of the board to perform their duties.

(h) Evaluating the need for and request additional technical assistance as required.

(i) Ensuring all available pertinent data is gathered before closing the field portion of the investigation.

(j) After coordination with the collateral board, authorizing recovery of the wreckage from the accident site when the field examination is complete; and releasing wreckage/equipment for disposition to the owning organization when the investigation is completed.

(k) Conducting frequent meetings of the board to ascertain progress, exchange information, and adjust assignments as necessary.

(l) Ensuring accident information is released only to appropriate authorities; such as, appropriate command, staff safety personnel concerned and USASC personnel.

(m) Advising appropriate safety officer/public affairs officer to contact local legal advisors in cases involving potential claims against the U.S. Government for personal injury or property damage.

(n) Ensuring data is correctly analyzed and conclusions are supported by evidence.

(o) Ensuring suitable recommendations are made and that a thorough and accurate report is completed and submitted according to AR 385–40 and this publication.

(p) If applicable, coordinating with the local CID handling the case.

(q) Writing the history of flight/event, findings, recommendations, and analysis for the technical report.

(2) *Recorder.* When possible, the recorder should be a safety trained individual. Physicians will not be assigned this duty. The duties of the recorder are listed below.

(a) Receiving and administratively processing information gathered by the members of the board.

(b) Monitoring report processing requirements and stages of completion.

(c) Assigning tasks and monitoring work of supporting clerical personnel.

(d) Ensuring all necessary substantiating data are collected and posted to the technical report.

(e) Assembling the final technical report.

(f) Performing other duties as assigned by the board president.

(g) Completing/helping with preparation of the human, materiel, and/or environmental narrative of the technical report.

(3) *Maintenance officer.* When possible, a maintenance specialist should be assigned to the board. The duties of the maintenance member(s) are as follows:

(a) Evaluating all maintenance forms/records to determine the pre–accident status of the equipment.

(b) Determining if equipment failed and could have contributed to or caused the accident.

(c) Researching equipment records for adequacy of inspections and correction of discrepancies; and determining if discrepancies existed that may have caused or contributed to the accident.

(d) Supervising preparation and shipment of items selected for teardown/analysis.

(e) Monitoring equipment recovery if accomplished before completion of the investigation.

(f) Reviewing the unit's maintenance procedures and record discrepancies.

(g) Completing all maintenance/materiel factor requirements for the technical report.

(h) Preparing or helping with the preparation of accident scene diagram(s).

(i) Performing other duties as assigned by the board president.

(j) Writing the materiel factors narrative for the technical report.

(4) *Medical Officer.* The duties of the medical officer board member are listed below.

(a) Helping in the medical, physiological, and psychological aspects of the human factors portion of the investigation. AR 40–21, AR 40–2, and appropriate chapters of this pamphlet govern the investigation and reporting of these factors.

(b) Helping with and conducting the accident survival, emergency egress, and survival/rescue portions of the human factors investigations according to paragraph 2–4 of this pamphlet.

(c) Ensuring the board is advised of medical/human factors related to the cause(s) of the accident, the reason therefore, and recommendations for corrective action.

(d) In case of off–post accidents or where local coroners/medical examiners are involved, promptly recovering the remains for autopsy (if applicable), specimen collection, records, and so forth.

(e) Investigating and reporting data concerning personnel injuries.

(f) Collecting and evaluating life support equipment (LSE), and personal protective clothing and equipment (PCE).

(g) Helping with or completing human factors narrative for the technical report.

(h) Determining the medical qualification/status of the personnel involved and rescue personnel.

(i) Performing other duties as assigned by the board president.

(5) *Other board members.* Other board members should consist of individuals who have considerable knowledge and expertise in the required fields; for example, instructor pilot, master/senior/equipment operator, and so forth. The duties of other board members are as assigned by the board president. Other duties are, but not limited to, the following:

(a) Examining and recording all factors involving operations of the equipment, to include assignment of personnel, mission planning, and the history of events from mission assignment to the time the accident occurred.

(b) Investigating and recording the status of personnel/individual training, experience, operating regulation, instructions, and unit directives. Recommending and preparing changes to ARs and TMs, if required.

(c) Investigating the activities of all personnel who were victims, had an influence on the mission, or played a role in the accident.

(d) Preparing a sketch of the accident site.

(e) Conducting and summarizing witness interviews as necessary for inclusion in the technical accident report.

(f) Completing/helping with the writing requirements of the technical report.

d. Support plan.

(1) Commanders assigned responsibility for the conduct or support of accident investigations will ensure that a local safety professional is available from the local safety office to assist the accident investigation board. The duties of the safety representative are as follows:

(a) Providing the local investigation board with an accident investigation kit (see para 2–9 for a listing of accident investigation kit contents) and/or other equipment necessary to conduct the investigation.

(b) Advising the board on technical aspects of the investigation and reporting of the accident.

(c) Helping the board in obtaining other technical assistance as required.

(d) Advising the board of administrative procedures concerning accident reports; for example, command channel review, forwarding correspondence, and so forth.

(e) Providing regulatory documents and directives pertaining to accident investigation and reporting.

(f) Providing necessary interpretation of local regulations and directives.

(g) Helping the president of the board in obtaining administrative support; for example, work space, typist, drafting, and so forth.

(h) Providing initial classification for the accident such as, Class A, B, and so forth.

(2) Commanders assigned responsibility for the conduct or support of an accident investigation will ensure that the following assistance is provided to the president of the investigation board, if needed.

(a) Engineer. Surveying and mapping the debris pattern, preparation of required sketches, and so forth.

(b) Local TASC/PA activity. Photographic assistance and communication.

(c) Public Affairs Officer (PAO). Handling press representatives and public information releases.

(d) Hospital commander. Treatment and examination of personnel, identification of fatalities, facilities and support for conducting autopsies, lab support, and other medical support as necessary; for example, the preparation and shipment of body fluid samples and specimens to the Armed Forces Institute of Pathology (AFIP) for analysis.

(e) Provost Marshal. Providing guards, traffic control, and site security.

(f) Weather officer. Obtaining complete weather information for the time and location of the accident.

(g) Maintenance support facility commander. Recovery of wreckage, disassembly and removal of components, and preparation for shipment of items selected for teardown analysis. Also, preparation of estimated cost of damage (ECOD) to help in classifying the accident. (See para 2–2e.)

(h) Transportation officer. Assistance in transportation to and from the accident site and expeditious shipment of components selected for teardown analysis.

e. Additional technical assistance. The board president should ascertain what additional specialized technical assistance may be necessary. Aside from the normal assignments of technical assistance, the more complex accident may require professional skills to help in the data collection and analysis. The board president has the authority to call for technical assistance from all agencies available to the local commander. Experts may include metallurgists, powerplant engineers, fuel and oil analysts, and others as the circumstances dictate. If assistance is needed that is outside the local commander's span of control, assistance should be requested through the USASC; such as, manufacturer's representative.

f. Collateral investigations interface.

(1) Collateral investigations are used to make a record of the facts for use in litigation, claims, and other administrative and disciplinary actions, whereas the safety investigation (hereinafter referred to as the accident investigation) is conducted solely for accident prevention purposes. Collateral investigations are conducted independently and apart from the accident investigation; they are appointed and conducted by local commands as required by DODI 6055.7 and AR 385–40, and use guidance contained in AR 15–6 and AR 27–20. Safety personnel will not conduct, review, or store collateral investigations.

(2) Accident and criminal investigations take priority over collateral investigations for purposes of access to evidence, witnesses, and the accident scene; however, a spirit of cooperation is also required to ensure that the collateral board will have equal access to the evidence.

(3) The accident investigation board may only provide the collateral investigator with copies of common source, factual information; for example, technical data, maintenance records, photographs, maps, diagrams, lists of witness names, and so forth. The content of witness statements may not be provided; nor may the accident board provide its findings, analysis and recommendations to the collateral investigator. Additionally, while transcripts of relevant portions of intra–cockpit voice recordings may be included in the accident report and probably released, this information may be released within the military for accident prevention purposes. The accident board will also allow the collateral board a reasonable amount of time to perform an accident scene investigation before disturbing the evidence by movement, disassembly, and so forth. If this cannot be accomplished due to the urgency of the situation, then the accident board must ensure that the scene is documented with photographs and a wreckage distribution (accident site) diagram, which will be made available to the collateral board. If the accident board removes components for analysis, the collateral board should be so advised.

g. Criminal investigation interface. Contact with the local criminal investigation division (CID) office should be made as soon as practical. Determine if the CID has assumed criminal investigative authority over the accident scene, initiated an investigation, removed any evidence, or completed/terminated its investigation of the accident site. The CID should determine as quickly as possible if a crime has been committed. If evidence indicates that the accident was the result of criminal intent (other than negligence, dereliction of duty, or disobedience of an order), the criminal investigation takes priority over all other investigations, and the accident investigation will be discontinued. Once criminal activity is determined not to be a factor, the CID will release control of the investigation to the accident investigation board. During the period where criminal intent is being determined, both investigations may proceed. Both the CID and the accident investigation board will cooperate with one another in order to ensure that each is able to effectively perform its mission. Information gained in the CID investigation can be released to, and used by, the accident investigation board. CID will, for example, provide the accident investigation board with copies of their report, to include witness statements, photographs, and so forth. However, the accident investigation board may release only those factual, non–privileged portions of its report to CID.

h. Minority report. The official accident report will be the one signed by the board president. The board should make every effort to resolve differences in opinion. However, if differences cannot be resolved, the disagreeing board member(s) will submit a minority report. In this report, it is not necessary to repeat evidence presented in the accident report. As a minimum, the minority report will include an analysis paragraph explaining the disagreement and a signature block of the minority member(s).

2–2. Preliminary accident site procedures

a. Overview. This paragraph outlines actions that normally occur according to the unit pre–accident plan. Since several of these actions may have to be accomplished prior to the arrival of the investigation board at the accident site, the unit/installation safety officer must ensure they are accomplished. The safety officer will be the officer in charge of the accident site as soon as EOD, chemical,

firefighting, and rescue personnel and military police/CID/civilian police have completed their duties and the fire chief has declared the area safe for entry. When the board president arrives, he will take charge of the accident site for the remainder of the investigation.

b. Actions to be taken.

(1) The first priority at every accident site is the safety of victims/personnel involved. These personnel include, but are not limited to, the occupants of the vehicle, fire and rescue personnel, security personnel, witnesses, bystanders, and the investigators. All injured personnel must be transported to a medical facility for examination and, if necessary, treatment of injuries. Caution is advisable since some injuries may not be immediately apparent due to the stressful nature of the situation. Key personnel involved in the accident must have certain medical tests administered to make alcohol, carbon monoxide, and drug determinations according to AR 385–40, paragraph 4–4 *a*(3). Specimens taken must be sent to the Armed Forces Institute of Pathology (AFIP) for analyses and evaluation. When the victims are obviously deceased, the bodies should not be removed before being photographed and examined by the medical officer if he is reasonably available (can be on site within 2 hours), except to protect from further damage. If the accident occurred off the military reservation, the local coroner/medical examiner has jurisdiction on removal of the bodies. Therefore, his permission is required before the military removes the bodies. If the coroner performs an autopsy, the board president must request that a military forensic pathologist be present during the autopsy.

(2) Immediate steps must be taken to prevent injury to personnel from fire, ammunition cook–off, hazardous materiel, burnt carbon fibre exposure (present for fires involving composite materials), and other potential hazards present at the accident site. The most effective means of providing security in these cases is to rope off the area and place guards around the scene at a distance sufficient to ensure protection for personnel. In cases where the hazard is an explosive device, an EOD unit should be alerted. Also, since composite materials (burnt or fragmented) are present in most modern aircraft, tactical wheel and track vehicles, and equipment, safety personnel must evaluate all accidents (both aviation and ground) for the presence of composite materials to prevent unnecessary exposure or endangerment of rescue, firefighting, and investigative personnel. Safety measures and procedures for handling accidents involving composite materials should be included in all pre–accident plans and incorporated in local crash rescue and firefighting training. Literature for establishing a composite materiel SOP, can be obtained by contacting USASC at DSN 558–2660, or (205) 255–2660. Even after the scene has been declared safe for entry by the fire chief, fire and other hazards will usually continue to exist and all personnel entering the area must be so advised.

c. Preservation of accident site.

(1) As soon as the accident scene is declared safe for entry, the next task is to ensure the wreckage and other physical evidence are safeguarded from bystanders and sightseers. This includes military and civilian personnel who have no official business at the scene, according to AR 385–40, paragraph 4–5. The local safety representative must ensure that guards remain on duty to keep unauthorized personnel outside the roped–off area. An entry point will be established where authorized personnel (personnel essential to the preservation of life, property, and evidence) can present their identification for entry clearance. Authorized personnel entering the immediate accident site area before the arrival of the board will be escorted by the safety officer. Limited access is essential to protect physical evidence such as ground scars, vegetation, and so forth, which is easily destroyed.

(2) When the evidence must be removed (clear a highway) before the investigation by the board, the local safety representative must ensure the original accident scene is documented. This includes preparation of an accurate wreckage distribution diagram along with a photographic record of the accident scene. Every effort must be made to preserve the evidence when it must be moved or disturbed. A record of any subsequent damage to the equipment during rescue or recovery must be maintained.

d. Preservation of evidence.

(1) The local safety representative must identify as many witnesses (by name, address and telephone number) to the accident as possible. Witnesses must be asked not to discuss the accident with other witnesses and informed that they could be contacted for an interview by the accident investigation board. If it appears that a witness may not be available for an interview by the board, the safety representative should conduct the interview for the board. He/she should also take as many written statements as possible and deliver them to the board president upon his arrival. He/she also needs to find out if any of the witnesses has video or photographic evidence that may be useful to the board. If such evidence exists, he/she should acquire a copy of it for the board.

(2) Records pertaining to the accident equipment and its crew/personnel must be gathered and secured. These records include the logbook, historical records, and the DA Forms 2408–13–1 (Aircraft Inspection and Maintenance Record) 6–month file. Individual/crewmember records, to include personnel (field 201 file), medical, dental and training records. Documents pertaining to the mission must also be gathered. The closest weather reporting facility should be notified of the accident with a request for a weather observation for the time of the accident.

e. Classification of the accident. The local safety officer has responsibility for initially classifying the accident according to AR 385–40, paragraph 2–2. To help the safety representative in accomplishing this task, the supporting maintenance facility will provide the safety officer with an estimate of the costs of damage (ECOD) and repair. The supporting medical activity will provide the safety officer with an assessment of the degree of injuries according to AR 385–40, if applicable. The accident classification is necessary to determine the required notifications of the accident according to AR 385–40 and local command procedures. Manhour costs in AR 385–40, flat rate manuals, or equivalent (number of manhours to repair/replace), and Army Master Data File (parts costs) are necessary references for estimating accident costs. In cases where the accident costs could fall into multiple classifications, the higher class should be used since subsequent upgrading may increase investigation requirements.

f. Press relations. If the PAO is not available, the local safety representative may have to handle press relations at the accident scene. The safety officer should be aware of the following:

(1) No attempt should be made to tell a reporter what they should write in a story or to restrict them from interviewing civilian witnesses. Military personnel should be cautioned against making statements, expressing opinions, or giving out information concerning the accident. A few moments of calm conversation with the reporter can usually prevent a great deal of misunderstanding.

(2) In most cases, news reporters will understand the truth of the statement that the accident investigation has just begun and that it is impossible to make statements with incomplete information. Without giving the appearance of trying to conceal anything or pass the reporter's questions off lightly, the safety officer should advise him that the post or local PAO will have a statement as soon as the exact events leading up to the accident are known. The safety officer and accident investigation boards are not authorized to issue news releases, but it usually will help press relations at an accident scene if they do not quote regulations as the reason why they cannot fill reporters in completely on the accident details.

(3) In many instances, the news reporters are able to provide a great deal more information than they receive. Sometimes reporters are among the first persons to arrive at the accident site and they may have talked to several witnesses before the rescue party arrives. This fact may not be apparent from their conversations, which probably will consist primarily of questions. In most cases, the reporters will be happy to pass their information along and give the investigator further assistance if they understand the value of their efforts to the safety program. If the news agency is asked to provide photos or film clips, be advised that a fee will usually be involved, so arrangements for financing should be made before making this

kind of request for assistance. The same caution applies to other nonmilitary agencies; such as, police, fire departments, and so forth.

(4) When an accident occurs on nonmilitary property, media personnel should be allowed complete freedom in taking photographs, after being requested not to disturb physical evidence consistent with procedures. If classified material is involved, the photographer should be advised of such. If necessary, the photographer may further be advised that the photographing of classified material may constitute a violation of Federal law. Any such classified material should be either covered or removed before photographs are taken. Although no restriction is placed on the photographer, a tactful request will usually prevent the use of gruesome photos. Media personnel should also be advised that the notification of next of kin may not have been accomplished.

Section II
Techniques

2–3. Witness interview techniques

a. Introduction.

(1) *Purpose.* In all accidents, witnesses will be advised that the sole purpose of the investigation is accident prevention. This means that, within the Department of Defense (DOD), their statement may not be used as evidence or to obtain evidence in connection with any legal, disciplinary or adverse administrative action. Their statements cannot be used by the Army against them or anyone else.

(2) *Interview.* The witness interview is an extremely important part of the investigation. Witnesses may provide clues that can help identify materiel failures/malfunctions, environmental conditions, and/or human errors. In the case of human error, the interview may provide the only evidence available to identify the error(s) and its cause(s). To obtain this type of information, the interviewer must be skilled in interview techniques.

(3) *Statement.* A witness statement should not be a verbatim or edited transcript of all that was stated. Summarization's of the witness's testimony should be used, but these should not exclude any information that helps in explaining why the accident occurred. These summarization's should be written in the third person ("the witness said,""they saw," and so forth), and not in the first person ("I saw," "I observed," and so forth.). The testimony of a witness will not be made under oath. The accident investigation board must obtain complete and candid information regarding circumstances surrounding the accident to determine the actual cause factors.

(4) *Promises of Confidentiality—Limited Use Reports.* Witnesses in a Limited Use investigation may be given a promise of confidentiality per AR 385–40, paragraph 1–7 *a*. This promises that their statement will not be released outside the Department of Defense, either to members of the public, the press, state or local governments, or other Federal agencies. Such confidential witness statements are also protected from public release under the Freedom of Information Act (FOIA). In addition, the U.S. Army promises to oppose in court any attempt to get a legal order to release their statement, and to use the Army's best efforts to appeal any court order to release their statement.

(5) *Specific Procedures Governing Advice to Witnesses and Promises of Confidentiality.* In both Limited Use and General Use investigations, it is important that witnesses understand the restrictions on the use of their interviews within DOD, as well as the releasability of their interviews to the public (under the FOIA). This is especially true in Limited Use investigations when a promise of confidentiality has been given to a witness. In Limited Use investigations, a promise of confidentiality will routinely be offered to the following categories of witnesses:

(a) Accident aircraft and vehicle crew members (pilot, maintenance test pilot, crew chief, drivers, tank commanders, and so forth).

(b) Technical inspectors and maintenance personnel.

(c) When a witness gave the interview under enhanced recall/hypnosis, the interview will automatically be treated and designated as confidential, whether or not the witness falls under one of these particular categories. Other witnesses questioned in Limited Use investigations may be offered confidentiality at the discretion of the investigator. Specific forms and procedural guidelines for their completion are at paragraphs 3–7 and 4–5.

b. Locating witnesses.

(1) Since witness information is based on recall and perception, it is advisable to interview all available witnesses. Witness statements may prove to be as valuable as physical evidence. Both types of evidence must be considered together in determining cause factors, as one may complement or clarify the other.

(2) Witnesses must be located and interviewed as soon as possible. Evaluation of their statements may tell the investigator what particular area of the investigation should be emphasized, thus reducing the time it will take to determine the causes of the accident.

(3) It is reasonable to assume that spectators and sightseers, who are at the scene when the investigator arrives, heard or saw something that attracted their attention to the accident and brought them to the scene. Talking to these people immediately may give the investigator information regarding the directions, actions, and sounds of the accident.

Note. Children should not be discounted as a potential source of information.

(4) In many cases, especially with aviation accidents, efforts to locate witnesses should not be confined to the actual scene of the accident. It may happen that a person many miles from the accident site has some relevant information to give. Evidence of smoke, fire, unusual maneuvers, erratic engine operation, structural failure, and loss of control may be obtained from observers along the route who were not necessarily witnesses to the actual accident. Other personnel, for example, crews of other vehicles/aircraft in the vicinity at the time of the accident, may be particularly helpful in establishing actual weather conditions. The operators of other vehicles may also be helpful in relating transmitted messages of vital importance.

(5) Statements taken from witnesses located immediately after the accident, before they have time to compare stories with other witnesses, are the most reliable. Get a statement, regardless of how brief, from all witnesses as soon as they can be located. Witnesses can always be visited again at a later time, if additional information or clarification of their statements is needed. However, the human mind has a tendency to fill gaps in recollection with logic and the longer a witness has to reconsider the events, the more he or she will subconsciously tend to do this.

(6) Local police and news media personnel can often be helpful in locating witnesses. These people, particularly reporters, are interested in interviewing witnesses, and it is quite possible that they will have found some witnesses having valuable information before the investigator arrives.

c. The witness. It is very important that the interviewer(s) establish a good rapport and gain the confidence of witnesses. It is not unusual to have to re–interview key personnel as more information becomes available from other sources or when the board begins analyzing data. Most witnesses can be placed in one of the following categories:

(1) *Individual personally involved.* Generally, these are the individuals actually involved in the accident (for example, pilot, copilot, driver, paratrooper, diver). However, other individuals having knowledge related to the cause of the accident must also be considered. For example, the spouse of the pilot involved in an accident could be interviewed for information.

Note. Interviews conducted to ascertain sensitive information should be conducted by the board president.

(2) *Supervisory and support personnel.* This category includes those personnel whose job performance could affect the outcome of the mission or the performance of personnel. It is also important to gain the confidence of these witnesses since questions relating to their performance will be asked.

(3) *Eyewitnesses.* This category includes not only persons who actually saw or heard things associated with the accident but also persons who saw or heard anything relevant to the subject matter of the investigation. The important point here is to try to separate what was actually seen or heard from what the witnesses may think they saw or heard.

d. The interviewer. The number of investigators present during the interview is at the discretion of the board president. However, more than two or three investigators could intimidate some witnesses and cause others to become melodramatic. One investigator should conduct the interview and maintain eye contact with the witness. Another investigator can monitor the tape recorder and take notes on areas for further questioning. When tape recordings are to be used, the witness must first consent to the electronic recording of the statement. When the first investigator has completed their questioning, they should then allow the other team member(s) to continue with further questions, if necessary. Once a summarization of the witness's testimony has been prepared, preservation of the actual recording is not necessary, and may be disposed of at the discretion of the investigation board.

e. Interviewing techniques.

(1) Initial questioning should focus on general areas rather than relying on a prepared list of questions that can be answered by a "yes" or "no." The areas that the interviewer should plan to direct the inquiry toward will be determined by the purpose of the interview. Area planning has the following advantages in addition to eliminating the tendency of the person being interviewed to answer "yes" or "no":

(a) It allows the witness to do most of the talking.

(b) It permits the witness to elaborate on pertinent details that a planned list of questions may fail to elicit.

(c) The interview is less formal and rigid.

(2) The interviewer should have the person being interviewed do most of the talking. One method for keeping a witness talking without a direct question from the interviewer is the pause. The pause is best employed following an assertion by the witness.

(3) The use of a tape recorder is the preferred method of recording witness interviews. It allows interviewer and witness to focus on the content of the interview. An alternate method is to take notes during the interview. However, this method should be used only when the witness objects to the use of a tape recorder. Although the first few minutes of a taped interview may make the person being interviewed feel "on the spot" or awkward, this is usually a transient condition and the remainder of the interview will be as candid as if unrecorded. If a tape recorder is used as the sole means of recording a witness statement, the interviewer should take a few simple precautions to guarantee that the interview will be recorded with sufficient clarity.

(a) Become familiar with, and test, the recording equipment before the interview. If the recording unit must be operated on its internal batteries, replace the batteries with fresh ones before the interview.

(b) Environmental noise, such as aircraft operating nearby or windy conditions when a recording is made outdoors, may seriously impair the clarity of what is being said by the interviewer and witness. Therefore, it is preferred that interviews be conducted at locations free of this kind of distraction.

(c) When several witness statements are taken via tape recorder, the interviewer will find it useful to begin each recording by taping the information required by the heading blocks of the witness statement. This not only allows each witness time to relax in the presence of the recorder, but it will ensure the proper identification of each witness and will complement the transcribing process when it becomes necessary to summarize witness statements in the accident report.

(4) If there is no tape recorder available, or if a witness seems hesitant about talking while being recorded, an alternate procedure is to take as few notes as possible during the interview, filling in the planned outline immediately after the interview.

(5) Witnesses should be encouraged to speak of matters that they have personal knowledge of; in this instance, what the witness saw or heard, not what he or she may have heard other witnesses say they saw or heard.

(6) Witnesses should be encouraged to tell in their own words all they know about the accident. Do not attempt to lead the witness.

(7) While talking, witnesses should not be interrupted except to prevent them from going too far into irrelevant matters.

(8) After the witness has finished giving a statement, questions should be asked to clarify doubtful points that may arise during the statement. Questions should not be phrased in such a manner as to suggest the answer. Get name, phone number and address for follow–up. Ask about eyeglass usage or hearing aid devices. Frequently, if these questions are not asked at this time, they may not get answered.

(9) The use of highly technical terms should be avoided when asking questions of a witness who may have no knowledge of the terms.

(10) A witness should be treated with utmost courtesy at all times and any semblance of coercion avoided.

(11) A witness may be able to express a statement better by sketches than words. Such sketches are acceptable as clarifications of the evidence. A scale model of the type of equipment involved in the accident is also useful as an aid in obtaining more details from a witness.

(12) When a witness refers to maps or photographs, these should be identified in the summary of the statement. The points mentioned should also be cross–referenced on the map or photograph.

(13) A witness may be able to give a clearer statement if interviewed in the same location where he observed the accident.

(14) The use of enhanced recall (hypnosis) is a valuable tool, but should be approached only after consulting with proper medical personnel and obtaining consent from the person involved.

f. Interviewing injured witnesses. The techniques for interviewing witnesses injured and hospitalized because of their involvement in an accident are not unlike those previously discussed for uninjured personnel. There are a few special considerations, however, as follows:

(1) The medical facility admitting and treating the injured survivors of an accident is responsible for their well–being. Therefore, interviews with injured survivors while they are in an inpatient status will be coordinated with the medical facility and attending physician(s) so as not to conflict with the injured survivor's medical needs. Utilize the board physician as an interface with the hospital/attending physicians.

(2) Timeliness in interviewing hospitalized witnesses, though desired, is not an overriding requirement. There are cases, however, that because of the nature and degree of injuries involved, may require subsequent evacuation of an injured key witness to another medical facility far removed from where the board is conducting its investigation. If this happens before the witness is interviewed, it may be necessary to have a board member conduct the interview(s) at the other medical facility later. If this is not feasible, then it may be possible to solicit the services of a physician stationed at or near the other medical facility to act as a proxy interviewer for the board.

(3) The physician member of the board is the logical person to represent the board when it is necessary to interview hospitalized personnel because of their involvement in the accident. In this case, it may be better to prepare questions in advance. They 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 physician member's responsibility to qualify the credibility of information obtained under these circumstances. Two or three short interviews with certain injured survivors may be more beneficial and have less negative effect on their emotional state than one lengthy session. Each case should be handled on the basis of its own circumstances. In any case, the well–being of the witness is paramount at all times and will govern the board's conduct of this type interview.

(4) It is not unusual for an injured survivor of an accident to initially be unable to recall details of the accident that would be useful to the board. The cause of this condition is usually temporary and medically valid, and the inability of the witness to recall details should never be interpreted as a lack of cooperation. Patience and empathy on the part of the interviewer under these circumstances may eventually result in obtaining the desired information, whereas persistence and impatience may not.

g. Evaluating witness evidence. All witness statements should be subjected to evaluation since a witness may be honestly mistaken about actions they took or observations they made. Also, some witnesses may have a personal interest in the matter and may have a motive to intentionally distort their testimony. When the statements are numerous, complex, or contradictory, the board should evaluate each witness statement for credibility. In general, very specific information about speeds or maneuvers provided by an eyewitness should be considered as approximations since even eyewitnesses with experience have difficulty with these estimates.

2–4. Human factors

a. Introduction. This section provides procedure and format to perform a systematic and comprehensive investigation of human factors. For discussion purposes, the human factors assessment will be addressed within the context of the following areas: human error, accident survival, emergency egress and rescue/survival, autopsy procedures, personal protective clothing and equipment, and facilities/services. The objectives of the human factors investigation is to identify system inadequacy(ies) within the interactions of man, machine, and environment (see fig 2–1).

b. Human influence.

(1) *Recording accident data.* Accident data recorded to date indicate most accidents can be ultimately traced to human errors (see para 1–3 *b*). When an accident investigation board lists human error(s) as causal, it does not necessarily mean the soldier/individual did something intentionally to cause the accident (as the use of the term "human error" might imply). For this reason, the human factors investigation must be broad in scope.

(2) *Identifying human error(s).* The first step in identifying human error(s) is to develop a chronology of events before, during, and when appropriate, after the accident. The need for placing events in order is to view human performance in the context that it occurred. The logical sources of information are the individuals involved in the planning, preparation, supervision, and execution of the mission. All of these individuals should be interviewed using the techniques discussed in paragraph 2–3. During these interviews, the operational expert may detect possible errors or at least suspect errors on the part of the individual being interviewed or the individual who is being discussed. Some errors may not become evident until much later in the investigation when the relevant chronology has been developed. For example, investigation into the causes of materiel failures may ultimately be traced to a human error. An error by an individual may be traced to other errors committed by supervisors, instructors, and so forth. Regardless of when or how factor(s) are detected, it is important that the investigator get all the available information about those factor(s). Without this information, it will be difficult for the board to "define" the factor(s) and identify its causes(s). Recent improvements in training publications have made the process somewhat easier since most operator and mechanic tasks have been defined in technical manuals (TMs) and soldiers' manuals (SMs). These task definitions include requirements and performance standards that will aid the investigator in identifying how the task was improperly performed. Other individual, supervisory, and support personnel tasks are identified in less specific terms in other publications or standard operating procedures (SOPs.)

(3) *Explaining human error(s).* Regardless of the task involved (for example, flight planning, installing a tail rotor, changing brake pads/shoes, and so forth); the explanation of how it was improperly performed should identify the directive, standard; and the performance deviated from or not complied with. The fact that an error occurred in itself has little meaning until its consequence(s) and relevance to the accident are also explained. Therefore, the defining and explanation process for human errors is not complete or meaningful until—

(a) The duty position of the individual involved is identified.

(b) The task the individual performed improperly in the context of the accident sequence is explained.

(c) The human error(s) is identified.

(d) The proper procedure for performing the task is identified.

(e) How the human error(s) caused or contributed to the accident is identified.

c. Causes of human errors.

(1) *Theory.* The basic belief behind the investigation of human errors is that there is some reason for all human behavior. Once this reason is identified and sufficiently defined, it can be modified/improved, thus reducing the probability of similar human errors and their consequences in the future. Therefore, the causes of human errors should be identified in terms of one or more system inadequacies.

(2) *Identifying system inadequacy(ies) (what allowed the mistake/error to happen).* The best way to identify system inadequacy(ies) is to work backwards from a mistake/error by asking questions aimed at "illuminating" the error. The most direct source of information is the individual who made the error. It is especially important to follow the procedure of paragraph 2–3 and not lead or intimidate this individual. The interviewer will have to use his judgment on how best to phrase the questions. The most practical approach is to establish the circumstances for the witness and allow him to recognize the error. If the witness acknowledges the error, the simplest method will probably be to come straight to the point and ask why he erred. Asking "why" can be extremely helpful in identifying the cause(s) of his improper task performance. On the other hand, if the witness does not recognize or acknowledge the error, it may be best for the interviewer to continue with other questions. In doing so, the interviewer lessens the possibility of making the witness defensive or uncooperative. The interviewer can continue by asking questions intended to identify possible system inadequacy(ies) which caused or allowed the error. After this indirect questioning, the interviewer can return to more direct questions about the error. This approach will usually produce the most reliable information. The human factors investigator will also have information from other sources. These include individual records, unit records, and other individuals who may have knowledge about the individual or the accident. A post–accident medical examination may identify physiological factors; for example, acute fatigue, alcohol, carbon monoxide, drugs, impaired vision, and so forth.

d. Accident survival investigation. The purpose of the accident survival portion of the investigation is to identify preventable injuries and report them in a format that will help in an injury prevention program. To accomplish this, the types of injuries must be defined and related to the impact, design, and other conditions to determine underlying causes. This investigation normally will be performed by the medical officer.

e. Emergency egress investigation. Egress associated with an accident is usually in response to an emergency situation. The egress may be voluntary or involuntary. Egress is the exiting of the vehicle/equipment/structure by individual(s) aboard/in it. Egress is terminated when the individual actually exits the equipment. Information to be reported will include—

(1) Where the individual was located when the initial attempt to exit the equipment occurred; such as, were there any delays in attempting the egress; for example, turn off fuel or battery.

(2) Where the individual exited the equipment. Ascertain any difficulties that were encountered due to obstructions, opening the exit, or in using the exit after it was open.

(3) Was assistance required? Assistance that an occupant requires in exiting the equipment could indicate a deficiency in emergency exit design or operation.

(4) Human factors contributing to difficulties in the egress. In regard to egress, human factors refer to the difficulties encountered in the interaction between man, machine, and the environment effecting egress.

(5) Egress materiel failure. Equipment and materiel used during the egress that failed to function or functioned improperly will be investigated and reported.

f. Survival/rescue investigation. The survival/rescue sequence of an accident includes that period of time from the onset of the accident to the time the individual has been reached by rescue personnel or has reached a facility that can provide medical care.

Throughout the investigation, it is important to examine factors that may have contributed to or inhibited the success of the survival situation. Consider methods used and time taken for actions. The methods survivors used to help in survival should be evaluated to determine if these methods were adequate or inadequate and why. The methods and equipment rescue parties used in locating, recovering, and rescuing survivors should be examined to determine their adequacy.

g. Autopsy procedures.

(1) *Requirement for autopsy.* A requirement that an autopsy be performed on the remains of air–crewmembers is contained in AR 40–21 and AR 385–40, paragraph 4–4 *a*(5). In other cases, to specifically include cases where soldiers on active duty or active duty for training die, the Commander, USASC, in consultation with the commander of the Medical Treatment Facility (MTF) nearest the scene of the accident or where the body is located, may authorize an autopsy on the remains per AR 40–2, paragraph 4–4 *c*(1). This authority applies to those cases where an autopsy is deemed necessary for safety reasons in order to determine the true cause of death. The pathologist must obtain permission to perform an autopsy from the appropriate military/civilian authority having jurisdiction over the body as it is recovered. In the above cases, investigation of a fatal accident is not complete without an autopsy, special body fluid, and tissue studies. Detailed instructions regarding collection and shipping of material for these studies can be found in appendix E. Every effort will be made by the medical investigator to obtain an autopsy report according to Army regulations.

(2) The Armed Forces Institute of Pathology (AFIP). The AFIP may provide on–site assistance for fatal accidents. When Army equipment and personnel are involved, requests for such assistance may be made through the USASC. The AFIP will also provide telephonic consultation on any accident. Telephone numbers are—(COM) 202–570–3232, (DSN) 291–3232. The AFIP, Washington, DC 20306–6000, can provide the following types of assistance.

(a) Collecting information that may show a correlation between pathological evidence and accident cause factors.

(b) Determining causes of unexplained accidents by detailed pathological study.

(c) Using pathological correlation to improve personnel and passenger restraint systems and equipment crash–worthiness.

(d) Accumulating pathological data from a wide variety of cases.

(e) Studying psychological and physiological factors that cause stress and may result in pathological changes.

(3) The pathologist/physician should examine the results of the autopsy for evidence that may help to explain the cause of the accident. This information is needed to determine the exact traumatic changes that occur, specify the causes of each, and differentiate whether they occurred before or after death. These determinations should not be used solely to determine the cause of death. They should also be used to establish time and cause relationship between preexisting disease and the accident, correlate injuries with various factors in equipment design, and determine all pathological evidence that might lead to an accurate analysis of the chronology of events surrounding an accident.

(4) *Conduct of gross autopsy.* Procedures for conducting gross autopsies are contained in appendix E.

h. Life support equipment and protective clothing and equipment.

(1) It is the responsibility of the investigator to analyze how well LSE, or other PCE, did the job for which it was intended. If the investigator determines the equipment did not operate as designed, the investigator must further determine if the item of equipment contributed to, or caused injury.

(2) All LSE and/or PCE that is in any way implicated in the cause or prevention of injury will be recorded in the accident report. Items that caused injury, failed to function as designed, or were significant in preventing injury should be shipped to the United States Army Aeromedical Research Laboratory (USAARL) for further analysis. This equipment includes, but is not limited to; helmets, survival vests and components, body armor, crashworthy seat system, restraint harnesses, inertial reels, seat belts, and air bags.

(3) Contact USAARL concerning which items of LSE/PCE that should be shipped and the supporting documentation required (DSN 558–6893/6943/6892 (COM (205) 255–6893/6943/6892).

(4) Before completion of the field investigation, the president of the investigation board will arrange for shipment of the equipment for laboratory analysis to:

Commander, USAARL
ATTN: Crew Injury/Life Support Equipment Branch
Building 6901, P.O. Box 620577
Fort Rucker, Alabama 36362–0577

(5) Equipment items sent to USAARL for laboratory analysis will be noted in the technical report of accident investigation. For personal LSE/PCE sent, identify the wearer/user of each item. For items sent such as a survival vest, count vest and components as one item, unless a component is torn free or separated during the accident sequence. Upon completion of the laboratory analysis, USAARL will dispose of unserviceable items and return serviceable items to the unit of origin or the supply system.

(6) Upon request by the USASC, a copy of the completed laboratory analysis performed under the provisions of this paragraph will be furnished for inclusion in the final report of the accident.

i. Narrative reporting. Paragraphs 3–6 and 4–4 provides instructions for narratively reporting the human factors investigation.

2–5. Materiel factors

Note. (In this paragraph, the term "equipment" is utilized to indicate the piece of equipment involved in an accident investigation (end–item); such as, aircraft, vehicle, structure, weapon system, component, part, and so forth)

a. Introduction.

(1) This paragraph provides procedures for performing a systematic and comprehensive investigation of materiel factors associated with an accident. The objectives of the materiel factors investigation are as follows:

(a) To establish the equipment's condition at the time of the accident.

(b) To describe the damage that occurred during the accident sequence.

(c) To identify materiel failures/malfunctions that resulted in an accident (what happened).

(d) To identify the system inadequacies for the materiel failures/malfunctions (what caused it).

(2) The investigation of materiel factors requires, as a minimum, the assistance of a maintenance or technically qualified individual.

b. Materiel failure/malfunction.

(1) Equipment, or a part thereof, is considered to have failed or malfunctioned when one of the following occurs:

(a) Becomes completely inoperable.

(b) Is still operable but no longer able to perform its intended function satisfactorily.

(c) Has deteriorated to the point where it is unreliable or unsafe for continued use.

Note. (This explanation does not apply if the equipment achieves any of these three states because the required operational situation/condition that it was employed in exceeded its design capability or operating limits.)

(2) The success of the materiel factors investigation is dependent upon determining the difference between failures/malfunctions that may have caused the accident and damage caused by the accident. The procedures to be followed are generally the same for all accidents, regardless of damage.

(3) The first step in identifying materiel failure/malfunction is to document the most obvious evidence available at the accident site by taking notes, photographs, and drawing diagrams. By the time these tasks have been completed, the human factors investigation will usually have some preliminary information from witnesses that may further indicate the most probable failures/malfunctions. These possibilities should be carefully examined. Even though the investigation begins by examining components that most probably failed, this examination is not complete until all major components and systems have been examined for evidence of failure/malfunction. In

cases where preliminary evidence, for example, witness statements, indicates no failures/malfunctions occurred, the examination is still required. The purpose of the examination in this case would be to describe damage along with substantiating the lack of evidence supporting a failure/malfunction. The next step is the shipment to a teardown analysis facility of those components that the board identified or suspected of having failed/malfunctioned. The teardown analysis is important since the board may not have the capability to determine how and why a component failed. The last step for the materiel factors investigation is to determine the cause of the failure/malfunction. Assistance can be obtained from the following facilities:

(a) Aircraft—Corpus Christi Army Depot (CCAD), Corpus Christi, TX 78419–6020, telephone (COM) 512–939–2326/2327, (DSN) 861–2326/2327.

(b) Ground vehicles—Tank–Automotive Command (TACOM) Warren, MI 48397–5000, telephone (COM) 313–574–6194/6121, (DSN) 786–6194/6121.

(c) Parachutes—Natick Labs, Natick, MA (COM) 617–651–5208, DSN 256–5208)

(d) LSE/PCE—USAARL, Ft Rucker, AL 36362 (COM) 205–255–6892, (DSN) 558–6892.

(e) Ammunition/Explosives—U.S. Army Technical Center for Explosives Safety (USATCES), Savana Army Depot, IL 61074, (COM) 815–273–8801, DSN 585–8801.

c. Causes of materiel failure/malfunction.

(1) *Overview.* As in the case of human error, the causes of materiel failure/malfunction can usually be traced to an inadequate systems element. (See app D for examples of metal fatigue and load stress failures.) Once identified, corrective action can be taken to prevent the probability of similar materiel failure accidents in the future. Thus, the causes of materiel failure/malfunction will be identified in terms of one or more system inadequacy(ies). A materiel system inadequacy is defined as a tangible or intangible element that did not operate as intended or designed and caused, allowed, or contributed to a materiel failure or malfunction.

(2) *Identifying system inadequacy(ies) (what caused it).* Once the materiel factors investigation has identified or at least suspects a failure/malfunction, it must continue the search for evidence to substantiate the cause of the failure. For example, could unit maintenance have caused a failure of this part, component, or system? To answer questions like this, the investigator must examine records and unit operating procedures. The materiel factors investigation must interface with the human factors investigation to search for errors/mistakes that may have resulted in the materiel failure. The investigator should try to gather evidence that will substantiate or eliminate each of the system elements that is within his capability to investigate. Thus, the procedure can be described as a process of elimination. If the investigation is unable to uncover evidence of a system inadequacy locally, the determination of the cause should be delayed until a thorough teardown and analysis can be completed.

d. Accident scene. The investigation of the equipment and the components must begin at the scene of the accident. It is here investigators get an overview of the accident pattern, degree of damage, direction traveled, and velocity when the accident occurred. This overview will play an important part in reaching decisions concerning all aspects of the investigation. Therefore, it is necessary to carefully document the scene of the accident as outlined in the following paragraphs.

(1) *Reconstruction of the accident sequence.* The goals of the investigator(s) include determining how and why damage, separations, and injuries occurred. The best way to initiate this effort is to begin at the point of first contact with objects in the path or with the ground and follow the path to its final resting place. During this survey, the investigator(s) will observe the condition and location of the various parts of the equipment and mentally begin the process of reconstructing the sequence of events that occurred during the accident. If relevant, the location of human bodies and their disembodied parts should also be located on the diagram. This process will not be completed until near the end of the investigation when sufficient information has been assembled to answer the questions of how and why damages and injuries occurred the way they did. Once the sequence of events has been established, the investigator(s) should then reconstruct the maneuvers or actions of the individuals or equipment, etc., just before the accident. If the accident sequence can be established back to the point where the difficulty began, the causes of the accident will be more clearly defined. The application of knowledge of the performance of the individual, or equipment, and so forth, under various sets of conditions, plus the use of basic controllability, will greatly help in making these determinations.

(2) *Accident site/wreckage distribution diagram.* An accurate, detailed diagram of the accident site will help the investigator(s) develop the actual sequence of events. This work may be done by the post engineer. However, in the absence of this expertise, the materiel factors investigator should accomplish this task. A field compass, measuring tape, protractor, rule, inclinometer, and writing materials are necessary to do the job.

(a) A polar diagram is a simple and effective method of diagramming the accident site. The top of the diagram will represent north. The main body of the wreckage (center of mass) can serve as the beginning or pole of the diagram. Choose a scale that will allow plotting of the total scene on the chart. Determine the compass heading of the equipment at its final resting place and place a semblance of the equipment on the diagram in such a position as to be able to plot the other debris from that point. Determine the direction from the equipment to the outlying items and scar marks. Measure the distance from one central point of the wreckage to these items/marks. Plot them on the diagram as to their positions relative to the main wreckage. Letters or numbers may be used on the plot so that a legend can be created to give the identification and the locations of the items in reference to the main wreckage.

(b) Grid method is another technique for detailing an accident site.

e. Techniques of obtaining photographs. Photographs are the best means of preserving physical evidence for study and evaluation. The local safety representative should obtain a photographer from nearest post/installation assets. It is important that photographs be of good quality and composition. Self–developing photos will provide instant results in the event other films fail to develop properly or are lost. Color prints are preferable, if available, but not mandatory. A good technique is to request proof sheets from the photo lab. This service can usually be provided in one day and will help in determining if additional photos are necessary. The proof sheets can also be used to select the most representative prints to be included in the accident report. All photographs used in the report must be numbered and captioned. Captions should explain in detail what the picture is supposed to show. Captions will include type equipment, date of the accident, and location of the accident. The direction toward which the photograph was taken may be included; for example, NE and SW. A photograph without a proper caption is confusing and of little value. Photographs taken at the accident scene should include the following:

(1) An overall view of the accident site (wreckage) taken from a minimum of four directions. Recommend eight photographs taken at 45–degree angles.

(2) A view of the ground path of the equipment from point of initial and major impact to the place where it came to rest. Impact marks are vulnerable to rain and traffic; therefore, a photographic record of this type of evidence should be accomplished promptly.

(3) Aerial views of the accident scene (equipment and weather permitting).

(4) Photos of objects struck by the equipment.

(5) Larger portions of the equipment wreckage.

(6) Detailed photographs of suspected failed parts that contributed to the accident.

(7) Photos of failed personal protective clothing and equipment and the agents causing the failure or injuries.

(8) Photograph and measure skid marks, ground scars, and so forth.

Note. (Put an object of known size along side an object whose size may be

distorted by the photograph; i.e. a pen or ruler next to a small piece of equipment or scar.)

(9) Any other photographs deemed of interest to the investigation board.

f. Marking and preserving evidence.

(1) *Protection and identification.* Parts or subassemblies suspected of failure/malfunction must be wrapped or boxed to prevent loss or further damage. Suspected metal failure surfaces should be coated with uncontaminated grease to prevent corrosion. Carefully tag and mark all parts so that they can be readily identified with the accident (place, date, and serial number of equipment) and their location at the accident scene. The tag should contain a brief statement regarding the suspected relationship of the parts to the causes of the accident. Examples of parts that may be preserved for more detailed examination are—

(a) Parts suspected of failure.

(b) Parts that appear to be improperly designed or contain faulty workmanship.

(c) Lines, fittings, wiring, or controls not properly supported and subjected to excessive strain or vibration.

(d) Ruptured plumbing or fittings.

(e) Faulty wiring, electrical or radio equipment.

(f) Defective engines, drive shafts, transmission, and accessories, such as carburetors, fuel controls, governors, and generators.

(g) Defective hydraulic system components.

Note. (Do not attempt to mate separated items together. This will destroy evidence.)

(2) Disassembly. Extreme discretion must be used in disassembling parts or components in the field. If it is known that parts and components will be submitted for teardown and analysis, disassembly should be avoided as it tends to compromise the analysis by destroying or obliterating bits and shreds of evidence the value of which may be known only to the analyst. However, when detailed disassembles are made, all parts must be tagged with complete information to include nomenclature, part number, locations, and any other significant information. Document all disassembly with photographs. Assistance in disassembly and inspection of components, parts, fuel, and oil may be obtained from the next higher echelon of maintenance or U.S. Army depots or other experts identified by the USASC.

g. Equipment records.

(1) As a minimum, the previous 6–month historical records; such as, DA Form 2408 series, the periodic inspection records, and the other relevant records should be reviewed. Check component times and replacement schedule. Review for compliance or noncompliance with modification work order(s) (MWO). Check for compliance with safety–of–use messages, safety advisory messages, safety–of–flight messages, and technical bulletins. Review current and delayed discrepancies records. Document all deficiencies and discrepancies noted for correlation against other materiel/maintenance factors uncovered during the investigation.

(2) Any modification or alteration of the equipment should be checked against applicable technical publications to ensure proper authorization. When alteration or modification of the equipment is suspected, a thorough investigation must be made to determine how these alterations or changes may have contributed to the accident (document with photos). Inspection should be made of structural repairs for quality of workmanship in fittings, welds, stitching, cables, and so forth. This inspection will disclose whether improper materials and workmanship contributed to the accident.

(3) It may be necessary to investigate possible cause factors that were not originally considered. Parts must be carefully preserved and protected.

h. Reassembly of wreckage. It may be necessary to reassemble wreckage to determine accident causes or to support a theory in an accident that is difficult to evaluate. When the entire system has been reconstructed, it may afford positive proof of the accident causes. Wreckage layout should resemble the original equipment as closely as possible. This gives the investigator a better overview of separations, fire damage, and control systems. A detailed and documented inspection of the wreckage layout will often lead the investigator to the areas or systems that played a role in the accident. The layout also helps the investigator in developing the sequence of events that occurred in the accident.

i. Failed parts. Unless there is conclusive evidence that a failure occurred during the operation, it is necessary to make a detailed inspection of each suspected failed part. In many cases, failure of the primary structure was caused by faulty design (improper material, incorrect assembly, previously weakened parts, and so forth). The maintenance records and operating history of the equipment must be reviewed for conditions that may have initiated or contributed to the failure. Suspect failed parts that may have contributed to the accident should be selected for laboratory analysis to determine the type and mode of failure. The investigation board must then fit that evidence into the total evidence to determine whether the failure contributed to the accident.

j. Special investigations.

(1) Investigation involving highly technical phases of the accident, as described herein, will require further study and special investigations. In many cases, this cannot be accomplished in the field, and the work must be continued by technically qualified personnel at a laboratory, depot, or factory. If mechanical failure occurred or is suspected, adequate photographic coverage must be provided and the suspect failed parts retained for further evaluation. Sketches, history, and explanatory material must accompany the parts and should contain enough information to give a clear picture of what happened. If a control switch, handle, or knob, were used improperly because of its design, or if one control was mistakenly operated when the operator intended to use another, the location, size, shape, method, or operation of the control may prove to be an underlying cause and must be examined. Statements of operator's deficiency should include his proficiency in the equipment involved in the accident as well as others. Different equipment may have controls or instruments in reversed positions from others operated by the operator and this could contribute to the accident. Accidents that are particularly difficult may require investigative techniques beyond the examination of physical evidence. The only limit to a good investigation is the imagination of the investigator.

(2) Another example is the special investigation required for Night Vision Devices (NVD).

k. Power plants. When power plant failure is the known or suspected accident cause, the investigator(s) should make every effort to obtain samples from the lubricating and fuel systems. These samples should be taken from several sources to ensure capture of any foreign substance that may be in the system. Inspect the power plant to determine if all debris caused by the failure was contained within the engine case. If not contained, every effort should be made to recover the missing pieces. All locations and impact marks should be marked and photographed. This information is needed to determine at what point in the accident sequence the power plant failed.

(1) *Field examination.* When the power plant is examined in the field, obtain the serial number of the engine, manufacturer, type, model, and all pertinent information from maintenance and inspection records. In addition—

(a) Locate all engine accessories and components.

(b) Check the position of primary and secondary controls to determine the position of the various valves controlling the flow of fuel to the engine.

(c) Obtain pertinent engine operation data prior to the accident.

(d) Obtain information from witnesses about engine operation such as smoke, fire, explosion, and unusual noises.

(e) If fire was a factor, determine the origin/location (para 2–5 *m* discusses fire in detail).

(f) Check the fuel system for leaks or obstructions from fuel tanks to combustion chamber.

(g) Check fluid carrying lines for improper installation or signs of malfunction.

(h) Check for water, corrosion, or sediment in the fuel and oil systems.

(i) Obtain samples of fuel, oil, and hydraulic fluid for laboratory analysis.

(j) Check oil filters and pumps for foreign particles.

(k) Check sources of fuel (including storage tanks, pumps, and fuel service trucks) for contamination, if necessary.

(l) Check the ignition system to include switches, spark plugs/igniters, and leads.

(2) *Analyze failures.* A review of the maintenance and inspection forms for operating time, malfunction, and technical manual compliance will often provide a lead to possible engine failures. The position of engine controls and readings on engine instruments should be carefully recorded. However, these readings may be affected by the accident forces and are not conclusive indications of the position prior to impact. If structural parts of the engine failed, these parts must be identified with a description of the failure. Sketches and/or photographs showing the failure are important in evaluating the cause. All accessories should be inspected and bench checked if malfunction is suspected.

l. Transmissions. The same investigation and analysis procedures identified in paragraph 2–5k apply. In addition, check transmission case for cracks, distortion and corrosion. If severity of impact broke the case open, check condition of gears and bearings for abnormal patterns or discontinuity; such as, gears out of mesh.

m. Fires.

(1) *Symptoms.* Fire frequently destroys or consumes clues that could readily disclose the accident cause; for example, ruptured or chafed–through fuel lines may be the origin of the fire and the cause of the accident and then subsequently be consumed by fire. Fire that is a result, rather than a cause, of an accident also hampers the investigator by the destruction or damage of evidence. If a fire occurred, determine when, where, and how the fire originated. A fire originating during movement will generally leave obvious traces, such as molten metal flow marks that will conform to the airflow pattern of the component concerned. A fire resulting from impact with the ground will often leave imprints of twigs, grass, or leaves in the soot pattern on the burned parts of the wreckage. Any folded, smoked, or blackened pieces of wreckage that, when unfolded, show shiny metal would indicate that the burning had followed the accident. Locate parts that separated from the equipment after the accident. If these parts also show signs of burning, then the fire existed before the accident. A minor fire will frequently burn undetected until a larger source of fuel is supplied. A large fuel–fed fire may result from a smaller fire that was started by hydraulic oil, engine oil, or other flammable material. Remember that fluid vapors can travel long distances before reaching a point of ignition.

(2) *Flammable fluids.* All flammable fluid–carrying lines should be traced and inspected for breaks, cracks, chafing, and loose fittings. Identify the tubing by reference to the color code or the schematic drawings in the applicable technical manual.

(3) *Witness information.* Witnesses are especially important in establishing certain facts about the fire. A burning piece of equipment immediately attracts attention and can be seen from many miles away. Normally, smoke from burning oil is blue–white in color; smoke from hydraulic fluid is white; and fuel (gasoline, jet fuel) smoke is black. However, the color and density will vary with changes of intensity of the fire.

(4) *Warning systems.* Determine how personnel were warned that a fire was in progress and how effective extinguishing attempts were. Record a complete step–by–step description of the procedure used for extinguishing the fire and compare it with the technical manual.

n. Communications/Navigation equipment. The requirement to determine the functioning capability and selected frequency of the communication/navigation equipment may vary depending upon the circumstances surrounding the accident. Normally, it is possible to determine the selected frequency/station regardless of the extent of component damage. The control/dash panel normally contains various functional select switches, volume control, digital readout channels or frequency. Determine if equipment or vehicle operators, crewmembers, crash rescue personnel, or early arrivals the scene moved any of the controls or switches. Index all movable switches and volume control before any changes are made from the position found. Analyze all toggle and rotary switches to determine if they show evidence of having changed positions as the result of impact/crash. If the indicators are missing, examine the rotary switch, determine which frequency is selected, and compare the position with a like serviceable unit. Obtain the assistance of communications, avionics or electronics experts for additional assistance if necessary.

o. Teardown analysis request, processing, shipment, and disposition (aviation only).

(1) *Request—aviation.* The Commander, CCAD, is the prime recipient and evaluator of all Army aircraft components/parts selected for teardown analysis (TDA). Commander, USASC; Commander, ATCOM; Commanders of field organizations/units; aviation safety officers; maintenance officers; and presidents of aircraft accident investigation boards are authorized to select components/parts for TDA. Requests for teardown analysis will be made in the interest of establishing aircraft or materiel deficiencies, regardless of accident/incident classification, for use in accident prevention or to establish causes of aircraft accidents.

(a) Control numbers. Before shipping any components/parts to CCAD, a QDR/EIR will be submitted on the components/parts according to the instructions in DA PAM 738–751. Authorized personnel will coordinate their requests for TDA with USASC. Approved requests will receive a USASC control number which will be placed on the DA Form 2407 (Maintenance Request) and be included in the address to CCAD.

(b) Data requirement. To obtain USASC control numbers, the following information will be submitted to USASC—

1. Point of contact (POC) who is knowledgeable of why the request for TDA is being made. Identify the unit the aircraft is assigned and unit address.

2. Telephone number(s), military/commercial, of the POC(s).

3. Materiel identification data for each item, to include: noun nomenclature of the component(s)/part(s), serial number(s), part number(s), national stock number(s); and when applicable the time since new (TSN), time since overhaul (TSO), number of prior overhauls, overhaul activity and date of last overhaul.

4. ATCOM QDR/EIR control number for component(s)/part(s).

5. Accident/Incident data to include: complete aircraft serial number from which component(s)/part(s) are removed, Army mishap classification, mishap date, state how the defect was found, description of the required analysis, and whether or not a DA Form 2397–AB–R (Abbreviated Aviation Accident Report)/Telephonic report has been provided to USASC, or any other technical data that may be of assistance to the materiel analysis personnel.

(2) *Processing.* The processing of the item(s) to be shipped for TDA will be accomplished by the nearest activity having a packing, crating, shipping capability. The item(s) to be shipped will be cleaned and decontaminated to the degree necessary to preclude the possibility of generating a health hazard or crop infestation. However, the cleaning process will not distort or remove evidence such as heat discoloration, abrasion, stress and torsion splinters, and corrosion. All possible traces of foreign matter such as vegetation, human/animal tissue, insects, dirt/soil, or contaminated water will be removed. This is especially required when items are shipped from outside CONUS. When contamination, loose ordnance, tools, or other foreign materiel are suspected as the cause of an accident or malfunction, photographs will be taken before cleaning and forwarded with the item(s) as evidence for study by the analyst.

(3) *Shipment.* DA Form 2407 will accompany each component/part. Insert the USASC control number in the first line of block 16. The description of the analysis desired will follow the USASC control number. DA Form 2410 (Component Removal and Repair Overhaul Record), when required and DA Form 2408–16 (Aircraft Component Historical Record), will accompany the item(s). Also, arrange for the most expeditious delivery/shipment of item(s) for TDA to Commander, Corpus Christi Army Depot (CCAD), ATTN: SCSCC–QLA, Corpus Christi, Texas 78419. Container(s) will be clearly, permanently, and conspicuously marked in red on a white

background and in sufficient size to allow for ease of visual identification. If container is too small, follow the QDR/EIR procedures contained in DA Pam 738–751. The marking will be as indicated below:

CDR, CORPUS CHRISTI ARMY DEPOT
ATTN: SCSCC–QLA
ATCOM SRA 5–3723
PURPOSE CODE A CCF
ACFT CRASH DAMAGED PARTS
FOR TEARDOWN AND ANALYSIS
SPECIAL HANDLING REQUIRED
EXPEDITE DA PAM 385–40.
USASC CONTROL NO. (XXXXX)

(4) *Disposition of TDA report.*

(a) CCAD/contractor/MFG will provide four copies of the final report to Cdr, ATCOM; Cdr, USASC, ATTN: CSSC–PMA (six copies if USASC conducts the accident investigation), one copy each to the applicable theater/command aviation safety officer, and four copies to the commander of the unit/activity that requested the analysis.

(b) Component(s) or part(s) submitted for TDA on USASC control numbers will be held until disposition instructions are issued by Cdr, USASC.

p. Paragraphs 3–6 and 4–4 provides instructions for narratively reporting the materiel factors investigation.

2–6. Environmental factors

a. Environmental factors are those environmental elements or conditions such as noise, illumination, space and weather conditions (for example, precipitation, temperature, humidity, pressure, wind, and lightning, and so forth) having an adverse affect on the performance of the individual or equipment so that an accident results or could result.

b. Assessment of environmental elements (for example, contaminants, noise, vibration, artificial illumination, acceleration, deceleration, radiation, adequacy of work surface/space, and weather conditions) should be accomplished to determine their influence on human and/or materiel performance. Contaminants (fumes, chemicals, and so forth) can lead to respiratory problems; noise (radio static, engine, and transmission noise) can distract attention, interfere with effective communications and lead to fatigue; inadequate illumination can cause reduced visibility; inadequate work space (cluttered, poorly designed drivers compartment) can contribute to procedural errors or limit outside visibility. Knowledge of environmental elements does not eliminate them as factors influencing errors, injuries or failures. To determine if an environmental factor should be assessed as a causal factor, the central question to ask is: Did this factor adversely influence human and/or equipment performance; was the environmental element unknown or unavoidable at the time of the accident/injury/occupational illness?

c. Environmental factors can be divided into those which could not have been avoided and those for which precautions could have been implemented to reduce or eliminate its adverse effects on personnel and/or equipment. An environmental deficiency should not be assessed as a causal factor if it was known and could have been avoided before the accident.

2–7. Accident investigation techniques for Electromagnetic Environmental Effects (E3)

a. Electromagnetic Environmental Effects (E3), formerly known as electromagnetic interference (EMI), is a recognized potential accident cause factor and should be thoroughly evaluated during all accident investigations to determine if it could or could not have influenced the operation of the equipment involved.

b. The following E3 list is recommended for use:

(1) During the initial phase of the investigation, try to determine if there is any evidence of an external energy influence on the equipment or its subsystems. Consider cockpit/instrument indications reported by surviving crewmembers, eyewitness reports, and other physical evidence. This is especially important where the physical evidence indicates that the equipment was out of control or malfunctioning prior to the accident. For aviation accidents, apply the current U.S. Army Aviation and Troop Command (ATCOM) criteria concerning the reporting of suspected electromagnetic interference encounters.

(2) If E3 can be ruled out as a causal factor during this stage, then note the actions taken to eliminate E3 as a causal factor. For class A or B aviation accidents, document this in the special investigation portion of the DA Form 2397–3–R (Technical Report of U.S. Army Aircraft Accident) narrative and the narrative portion of the DA Form 2397–AB–R (in this instance, E3 was considered but ruled out for the following reasons:). For ground accidents, document this in the narrative of DA Form 285/DA Form 285–AB–R (U.S. Army Abbreviated Ground Accident Report) or on a separate piece of paper.

(3) If E3 cannot be eliminated early on, or there are positive indications of an external energy influence, advise the USASC immediately, DSN 558–3943, and request technical assistance. In addition, perform the following:

(a) Check for high intensity radio transmission areas (HIRTAs) in the area of the accident. Note visual flight rule (VFR) sectional or tactical maps for large towers (transmitters) in proximity to the accident site. Identify mobile transmitters operating within the area at the time of the incident. For aviation accidents, apply HIRTA standoff criteria contained in current ATCOM messages (HIRTA guidance).

(b) While taking aerial photographs of the accident site, review the area surrounding the accident for large towers (transmitters) such as radio/television, telephone microwave, radar, etc.

1. All towers (transmitters) are considered a potential source and should be plotted on a diagram in relation to the accident site.

2. Contact owners of the towers (transmitters) to determine the hours of operation, nature of transmission(s) (signal power level, antenna gain, and frequency), signal beam width, and azimuth(s) of transmitter signal(s).

c. For aviation accidents, gather any and all available ATC tapes, to include radar and voice, for later review.

(1) If there are surviving crewmembers, record all cockpit/instrument indications experienced during the accident (such as, caution/warning/advisory light illumination, audio warning tones, degradation/loss of flight controls, stiffness of pedals, and so forth). To compare cockpit/instrument indications with the data base of known type aircraft responses to E3, call ATCOM Engineering, DSN 693–1634 or COM (314) 263–1634.

(2) If there are no surviving crewmembers, analysis of the above data plus any additional information gained from flight data recorders (if so equipped) will indicate possible contribution of E3.

(3) If E3 is considered a potential causal factor due to accident circumstances, teardown analysis and review of acceptance test procedures for affected systems/components may be required.

d. Close coordination with the USASC will be maintained throughout the E3 investigation. E3 can be eliminated as a causal factor only if accident circumstances (physical evidence, equipment maintenance history, witness statements, and so forth) indicate a suspected materiel failure or human error was the primary cause or if subsequent investigative actions described above have been completed.

e. The USASC office for additional technical aspects concerning this information is Engineering Programs Section, DSN 558–3943/6219; the USASC office for policy aspects of this information is the Programs Division, DSN 558–2947/3367.

2–8. Analysis

a. Documentation. A systematic analysis of the data collected during an accident investigation is required. The accident causes identified in the analysis will become the basis for developing findings and recommendations contained in the technical report of the

accident. Findings and recommendations cited in the technical report will have an impact on remedying system inadequacy(ies). The written analysis must fully support each finding. Therefore, the analysis shall be thorough, logical, and conclusive.

b. Concept. The reasons people make errors, materiel fails, environmental conditions contribute, or injuries occur in an accident are the keys to accident prevention. The rationale behind this premise is that if the reasons (system inadequacy(ies)) can be dealt with effectively, then the probability of similar deficiencies causing future accidents or injuries can be reduced.

c. Scope. The accident analysis function inherently requires that the accident data be examined in detail to determine how man, machine, and environment interacted. The scope of the analysis will not necessarily be limited to the field investigation of the accident and may extend beyond the tenure of the investigator/board. The contents of the report will subsequently be reviewed and analyzed by the USASC and other agencies responsible for the management of resources.

d. Objectives.

(1) Analysis of the data collected during the investigation permits the board to reach a consensus. The objectives are as follows:

(a) Establish a chronology of events as they relate to the accident.

(b) Identify human errors, materiel failures, and/or environmental conditions that caused or contributed to the accident (what happened).

(c) Identify system inadequacy(ies) that caused or permitted errors/failures/injuries to occur or environmental factors to contribute (what caused it).

(d) Determine adequacy of LSE/PCE equipment in terms of minimizing/preventing injuries (how injuries occurred).

(e) Provide corrective actions having the best potential for remedying the system inadequacy(ies) (what to do about it).

(2) Each objective has related tasks as follows:

(a) The scope of the chronology may include events that occurred before, during, or after the mission. The need for placing events in a chronological order is to view human error, materiel failure, environmental conditions, and injuries in the context that they occurred.

(b) To identify errors/failures/environmental factors that caused or contributed to the accident, it will be necessary for the board to evaluate each event in terms of its accident cause relationship. When it is determined that an event involves an error/materiel failure/environmental factor that contributed to the accident, it should be defined as follows:

1. When the error/failure/environmental condition occurred in the context of the accident sequence of events.

2. Who (duty position) erred, what (part component, system) failed, or what environmental factor contributed.

3. The task or function required of the person, part, component, or system when the accident occurred.

4. How performance of the task/function deviated from published orders, SOPs, directives, standards, or common practice, or how the materiel failure deviated from design limits, specifications, and/or performance standards.

5. The effect/results(s) of the error/failure/ environmental condition.

(c) To determine adequacy of LSE/PCE equipment, the board must evaluate injuries in terms of whether they could or should have been prevented.

(d) To identify system inadequacy(ies) that caused or permitted an error/failure/injury to occur.

(e) To provide corrective actions having the best potential for remedying the system inadequacy(ies), the board must—

1. Specifically tailor the corrective actions to the system inadequacy(ies).

2. Identify the activities having proponency for the correction of the system inadequacy(ies).

3. Recommend remedial measures to the activities and/or levels of command most capable of correcting the system inadequacy(ies).

e. Credibility. The credibility of the findings and recommendations presented in the technical report will depend largely on how completely the board analyzes the accident data. The conclusions resulting from the analysis should be fully supported by evidence whether it be direct, circumstantial, or a combination of both. A lack of evidence will make the analytical task more difficult. In this case, it may become necessary for the board to develop hypothetical explanations of what may have caused the accident. When the hypothetical approach is used, the hypotheses should be developed and discussed in terms of why certain explanations are or are not supported by the evidence. Through deductive reasoning and a process of elimination, the most probable cause(s) can be established.

f. Coordination.

(1) All board members will frequently meet as a group to discuss mutual progress, trade information, reduce redundancy, resolve conflicting information, and redirect investigative efforts as appropriate. As these meetings grow in number, it will not be unusual to discover that data initially considered insignificant may prove to be important and vice versa. Also, preliminary data that may appear to be a cause of the accident may prove to be an effect or result, and so forth. Therefore, board members should keep an open mind and stay flexible, receptive, and discerning throughout the investigation. Board members should not entertain preconceived ideas as to the cause of an accident.

(2) A point will eventually be reached where the data collection phase is completed and there are no remaining sources of information or expected inputs. What remains are the tasks of finalizing the analysis effort and structuring the results in a format that clearly shows the interrelationships between cause related factors and the system inadequacy(ies) that caused or permitted them to occur. When these tasks are properly accomplished, the final task of developing/writing findings and recommendations is greatly simplified.

g. Deliberations/analysis sessions.

(1) When the investigators responsible for collecting and analyzing accident data have completed their tasks, the entire board should meet at a central location to collectively review the data and finalize the analysis. The facility used for the meetings should be secure and free from distractions and allow for privacy. The board president will chair the meetings and guide the proceedings. The investigator responsible for conducting the human and materiel portions of the investigation should present the factors he believes caused the accident, contributed to injuries, or had other significance. In presenting this information, the events directly involving each factor should be identified. This will help to place each factor in its proper perspective and relation to the other events. Factors associated with an event will usually fall into one of five categories.

(a) Factor(s) that definitely contributed to the accident (present and contributing).

(b) Factor(s) suspected to have contributed to the accident (suspected present and contributing).

(c) Factor(s) that did not contribute to the accident but contributed to the severity of the injuries (present and contributing to the severity of the injury or extent of property damage).

(d) Factor(s) that did not contribute to the accident but caused injuries or could adversely affect the safety of continued operations if left uncorrected (present but not contributing).

(e) Factor(s) that in no way contributed to the accident but identify local conditions or practices that should be corrected. Although these factors do not have to be addressed in the analysis or listed in the findings and recommendations part of the technical report of the accident, they should be subsequently briefed to the lowest level commander capable of taking corrective action; for example, minor administrative errors in records keeping, inadequate procedures, and/or lack of required SOPs, directives, and so forth.

(2) The investigator should next identify each system inadequacy(ies) that caused or permitted the factor to become causal. Tangible system inadequacy(ies) offer a better potential for corrective action than intangible. Therefore, the tangible system inadequacy(ies) causing or permitting causal factors should be identified if possible. If a consensus of the board members agrees with the

factors presented and their associated system inadequacy(ies), the process continues until the investigators have completed their presentations. The board president should not allow unresolved issues to be debated indefinitely during deliberations. If a board consensus on an issue cannot be reached within a reasonable amount of time, the board president will decide the issue and continue with the proceedings. There are provisions for submitting a minority report as explained in paragraph 2–1.

(3) It may become apparent during the deliberations that evidence is conflicting. In such cases, the board usually has two choices:

(a) It may further question personnel involved or other witnesses. If this approach is used, it is probably best to come directly to the point; such as, inform the personnel being questioned of the conflict and ask for an explanation.

(b) If the first approach does not resolve the conflict, it may be possible to rationalize why the conflict exists and then develop a hypothetical explanation. In any case, the board is responsible for resolving conflicts and must carefully weigh the evidence and decide what is most credible.

(4) When the board has reached a consensus on each significant factor involved in the accident, a concerted effort is necessary to develop corrective actions having the best potential for remedying each system inadequacy. When a board consensus concerning remedies is achieved, the commands or activities having proponency for correcting the system inadequacy(ies) should be identified. When this is accomplished, the remedial measures proposed in the technical report can then be directed to the activities and levels of command best capable of accomplishing them. To achieve the goal of accident prevention, recommendations should not focus on specific punitive or administrative actions that might deal with the shortcomings of a particular individual in a specific case. Rather, the recommendations should address the issue on a broader level. Each recommendation will identify the actions to be taken at the appropriate level of command; such as, unit–level actions, higher level actions, DA–level action, or the agency/activity most appropriate to fix the system inadequacy(ies). The recommendations will be written in conjunction with the findings and will be included in the technical report of the accident.

(5) The task of summarizing this information and transposing it into a complete and informative format remains. The final results of the total analytical effort will be summarized in the findings, recommendations and analysis portion of the technical report. To accomplish this, each error/mistake, materiel failure/malfunction or environmental condition with its corresponding system inadequacy(ies) should contain the elements of information outlined in this paragraph.

2–9. Accident investigation kit contents

a. This paragraph contains a list of items recommended for an accident investigation kit. It is neither all inclusive, nor mandatory.

b. Each organization should assemble its accident investigation kit based on their mission and needs. Items listed in paragraphs (3), (4), (7), and (8) below should not be stored in kit, but obtained as needed.

(1) Carrying case for kit contents.

(2) Camera (recommend 35mm camera with at least a 50mm lens).

(3) Film (prints and slides).

(4) Tape recorder (with adequate quantity of blank tapes, batteries).

(5) Inclinometer/Abney level.

(6) Tape measure, 100 foot (steel recommended).

(7) Optic range finder/distance measuring (batteries if needed).

(8) Flashlight (batteries).

(9) Magnetic compass (lensatic).

(10) Small magnifying glass.

(11) Pocket/universal multi–tool, with case.

(12) Steel ruler (1 foot) with large index.

(13) Screwdrivers (flat tip and cross tip).

(14) Pliers and crescent wrench (8 inch).

(15) AR & DA Pam 385–40.

(16) Appropriate forms (DA 285, DA 2397 series, AGAR, AAAR, and so forth).

(17) Additional references (TMs, FMs, and local regs/SOPs).

Determining System Inadequacy(ies) Responsible for Human Error

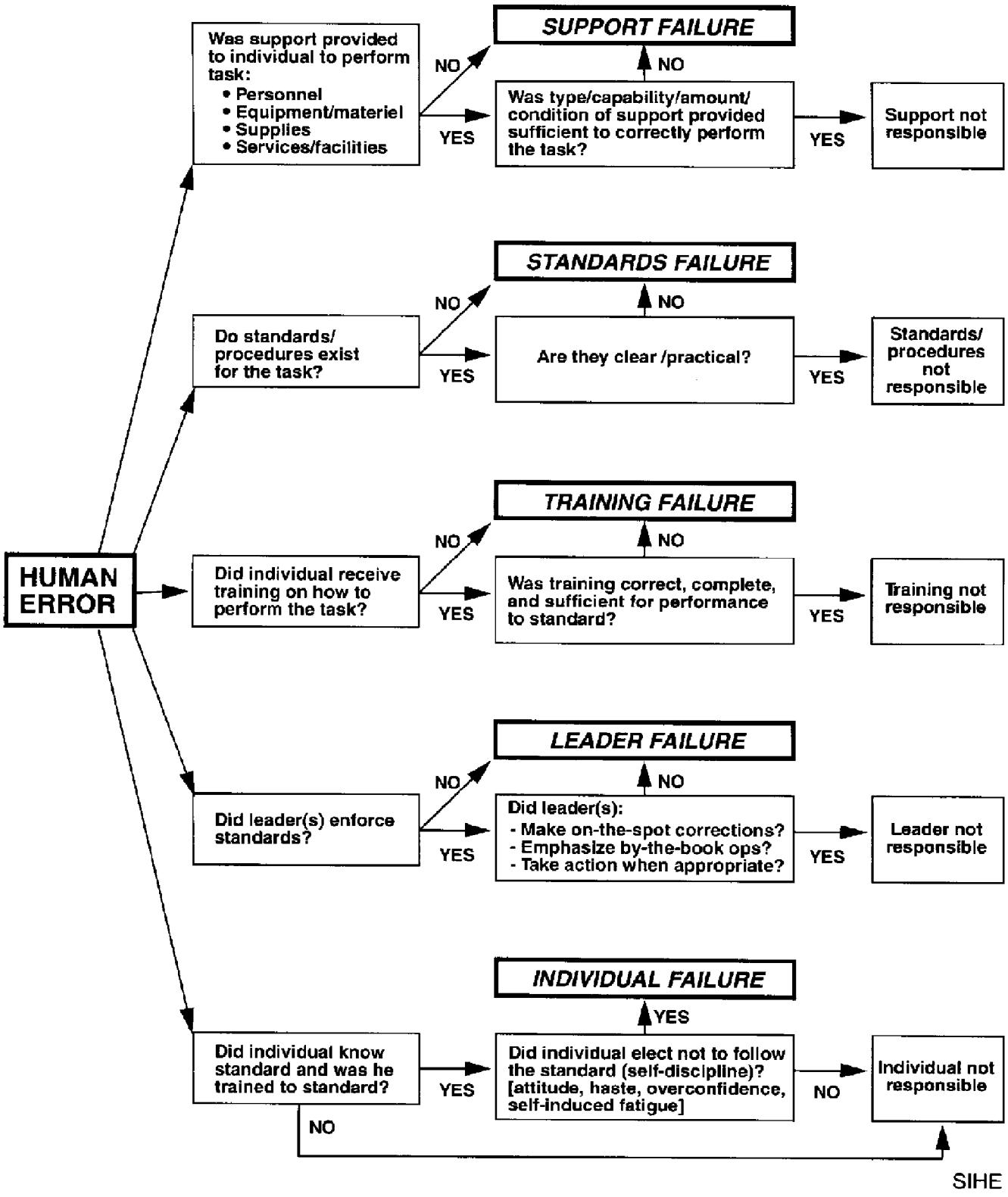


Figure 2-1. Determining system inadequacy(ies) responsible for human error

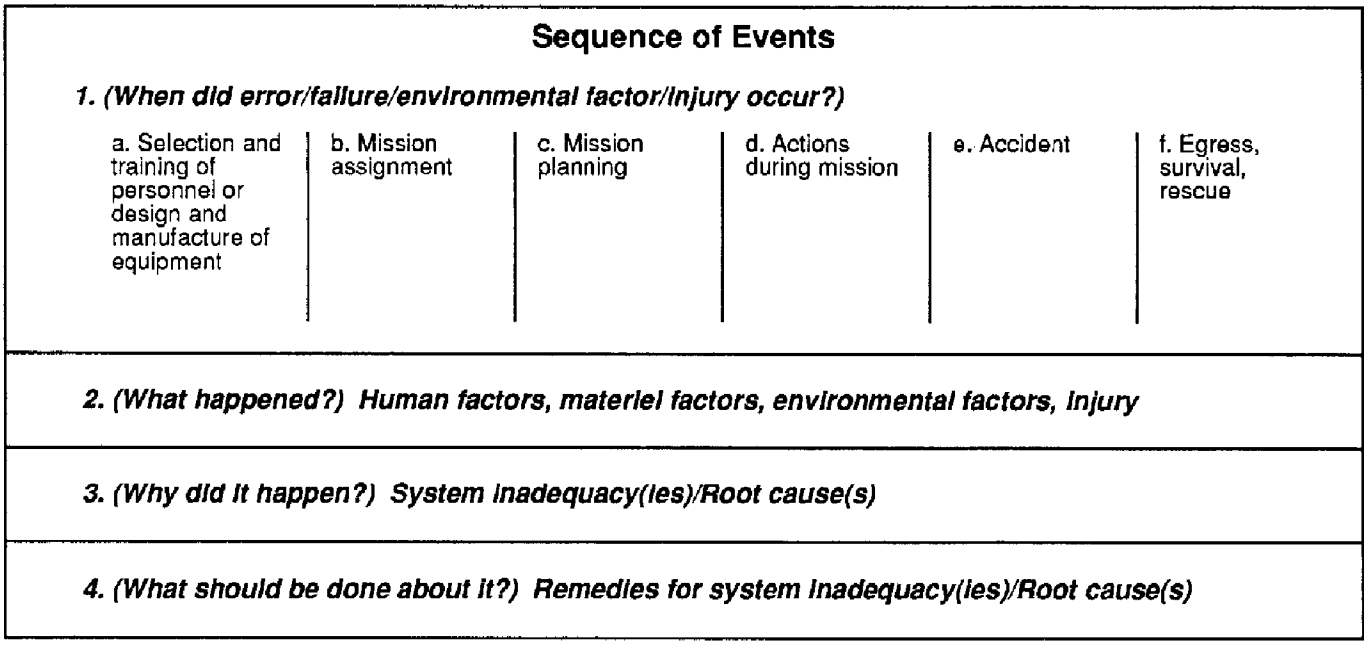


Figure 2-2. Sequence of Events. Method to place each factor in its proper perspective in relation to other events

Chapter 3
Aviation Accident Reporting

3–1. Introduction

AR 385–40 prescribes the classes of aircraft accidents that will be reported via DA Form 2397–R series and DA Form 2397–AB–R, Abbreviated Aviation Accident Report (AAAR). This chapter identifies the types of substantiating data that will be appended to each report and includes instructions on how to process the data. This chapter also provides information for determining which forms of the DA Form 2397–R series are required for each report (See table 3–1). Detailed instructions are included explaining how to complete each form, including the DA Form 2397–AB–R.

3–2. DA Form 2397–R Series, Technical Report of U.S. Army Aircraft Accident

a. Instruction. DA Forms 2397–R series consist of 12 technical reporting forms, a command review form, and two index forms. The forms are designed for reporting Army aircraft flight or flight–related accidents. Not all forms are necessary for every technical report. See table 3–1 for general information on the requirement for submitting each form of the series. Specific instructions concerning the submission of each form are given in this chapter in the paragraph relating to that form. The DA Form 2397–R series are not available through publications supply channels. They will be reproduced locally on 8 1/2– by 11–inch paper. A camera–ready copy of each form for reproduction purposes is at the back of this pamphlet.

b. Formats. The forms contained in the DA Form 2397–R series are designed to provide three different accident report formats. The first format is narrative in content and includes DA Form 2397–R (Part I – Statement of Reviewing Officials) and DA Forms 2397–2–R (Part III – Findings and Recommendations), 3–R (Part IV – Narrative), and 4–R (Part V – Summary of Witness Interview). The second format requires graphic information on DA Form 2397–5–R (Part VI – Wreckage Distribution). The third format requires coded data on DA Form 2397–1–R (Part II – Summary), the bottom part of DA Form 2397–2–R, and DA Forms 2397–6–R (part VII – In–Flight or Terrain Impact and Crash Damage Data) through 12–R (Part XIII – Fire Data) which will be stored in the Army Safety Management Information System (ASMIS). It is essential that the forms contain all information requested in the instructions and that the information provided is accurate.

3–3. DA Form 2397–R, Part I, Statement of Reviewing Officials

DA Form 2397–R (fig 3–1), will be submitted with the copy of the technical report forwarded through channels to the USASC. If additional space is required, use letter–size paper for continuation sheets.

3–4. DA Form 2397–1–R, Part II, Summary

DA Form 2397–1–R, Part II, Summary (fig 3–2), will be completed for each aircraft accident requiring a technical report according to AR 385–40. (See tables 3–3 through 3–6 for additional information.) The purpose of the form is to summarize essential elements of information contained in other parts of the technical report. Accidents involving one aircraft require only one DA Form 2397–1–R. Accidents involving more than one aircraft may require additional DA Forms 2397–1–R, depending upon the circumstances. A DA Form 2397–1–R is required for each aircraft involved which meets the criteria for flight, flight related, or aircraft ground accident per AR 385–40. A DA Form 2397–1–R will be completed in its entirety for the aircraft and crew deemed most responsible for the accident. This DA Form 2397–1–R will be referred to as the "case aircraft." Additional DA Forms 2397–1–R, identifying other aircraft involved in the accident, will be completed as necessary to account for all aircraft except inactive or otherwise nonparticipating aircraft. These DA Forms 2397–1–R, however, do not require a duplication of the information entered in blocks 1 through 7 and blocks 9, 20, 23, and 24 of the "case aircraft" on DA Form 2397–1–R. Damaged aircraft that were inactive/nonparticipating will be costed as "other damage military."

3–5. DA Form 2397–2–R, Part III, Findings and Recommendations

DA Form 2397–2–R (fig 3–3), will be completed for all aircraft accidents requiring a technical report according to AR 385–40. (See tables 3–3 through 3–6 for additional information.) If additional space is required, use letter–size paper for continuation sheets. This form is designed to provide a narrative and coded summary of accident cause factors, system inadequacies, and remedial measures. Block 1 is used to explain block 2 in terms of what happened, why

it happened, and what should be done to reduce the chances of its happening again (3W approach). An abbreviated list of the codes and associated mistakes/errors, materiel malfunctions, environmental conditions, system inadequacy(ies) and remedial measures is provided at table 3–7. Appendix B contains expanded descriptions and examples of the abbreviated codes.

3–6. DA Form 2397–3–R, Part IV, Narrative

DA Form 2397–3–R (fig 3–4), will be completed for all aircraft accidents requiring a technical report per AR 385–40.

3–7. DA Form 2397–4–R, Part V, Summary of Witness Interview

a. Instruction. DA Form 2397–4–R (fig 3–5), will be completed for all aircraft accidents requiring a technical report according to AR 385–40. As a minimum, summaries of the interviews with surviving crewmembers aboard the aircraft will be included. The form will also be used to summarize interviews and statements of commanders, supervisors, maintenance and ground support personnel, and others who are able to contribute pertinent information concerning the accident. If additional space is required, use letter–size paper for continuation sheets.

b. Procedural guidelines. The following procedural guidelines/ instructions will be followed:

(1) All witnesses will be interviewed according to paragraphs 2–3 *a* and *e*, chapter 2. The investigator will emphasize to the witness that the sole purpose of the accident investigation is accident prevention. The witness should be further informed that the U.S. Army seeks to isolate the causes of the accident so it may take appropriate action to avoid similar accidents. If the witness is a civilian, the investigator will avoid using Army terms and acronyms.

(2) The board president or recorder will brief all witnesses concerning the interview. This will be done by reading to the witness the information on the back of the DA Form 2397–4–R, contained in Block 15 (see fig 3–5), the "General Witness Information Briefing." The purpose is to ensure that the witness understands the purpose of the interview, who will have access to the information, DOD restrictions on the use of the interview, and its public releasability. If a promise of confidentiality is to be offered, the interviewer will read the section, "Promise of confidentiality offered." This includes the specific categories of witnesses (crewmembers and maintenance personnel) to whom confidentiality will be routinely offered, any interview under enhanced recall/hypnosis and any other cases in which the interviewer feels it is necessary to offer a promise of confidentiality (to include situations where the interviewer feels that the witness is not providing complete or accurate information). This explains to the witness that the interview may be used within DOD only for accident prevention purposes. Beyond that, it explains that non–confidential interviews are publicly releasable and, to avoid that outcome, the interview must have been given under a promise of confidentiality. If a promise of confidentiality is not offered to the witness, the interviewer will read the section, "No promise of confidentiality offered." It explains that within the military, the interview may only be used for accident prevention purposes. It also explains the rules governing the public releasability of the interview.

(3) When a promise of confidentiality is offered, the witness will complete block 16, "Availability of Promise of Confidentiality for Limited Use Report of Investigation." The witness will initial section b by indicating his/her choice, requesting or declining confidentiality (note the exception for interviews under enhanced recall/ hypnosis, which will automatically be deemed confidential and treated as such).

(4) If the witness is willing to be interviewed or make a statement, it will be summarized in block 13, DA Form 2397–4–R.

(5) The promise of confidentiality will be entered in block 12, DA Form 2397–4–R, and will be signed and dated by the interviewer. The promise is as follows: "The witness made this statement under a promise of confidentiality." The summarized interview will then be set forth in block 13.

(6) There is no requirement to have an interview signed by the witness, and such should not be done. The interviewer does not have to sign either, except as addressed above. To approach a witness for a signature may give the indication that the statement will be used for purposes other than accident prevention. Neither is it necessary to record explanations discussed in paragraph 3–7 *b* on the DA Form 2397–4–R.

(7) Witness statements should be summarized for inclusion in the report. The complete, verbatim account of all that was stated should not be included. A summarization is to be used, but it should not exclude any information that assists in explaining the circumstances of the accident.

3–8. DA Form 2397–5–R, Part VI, Wreckage Distribution

a. Instruction. DA Form 2397–5–R (fig 3–6), will be submitted with each technical report, when needed to substantiate information that is not clarified by other data reported in the DA Form 2397–R series. A decision to not include this form should not be construed to mean diagramming of the crash scene will not be used as an investigation technique. The board may be required to furnish a copy upon request.

b. Form terminology.

(1) *Wreckage distribution.* The location of all aircraft components in their postcrash positions. The locations should be shown relative to the flight path of the aircraft.

(2) *Initial impact.* The first contact of the aircraft with terrain or obstacles.

(3) *Major impact.* The impact causing the most severe crash forces.

(4) *Secondary impact.* An impact that is less severe than the major impact. Several secondary impacts may occur in an accident.

3–9. DA Form 2397–6–R, part VII, In–Flight or Terrain Impact & Crash Damage Data

a. Introduction. DA Form 2397–6–R (fig 3–7), will be completed for the following (see table 3–6):

(1) All technical/reports involving in–flight collisions (see definitions below), excluding tail rotor strike accidents.

(2) All technical reports involving aircraft damage excluding the following:

(a) Aircraft ground accidents.

(b) Flight–related accidents with no aircraft damage.

(c) Rotor blade strikes (main or tail rotor) with no additional aircraft damage.

b. Flight terminology.

(1) *In–flight collision.* The aircraft collides with an obstacle while in flight (helicopters at an altitude greater than normal taxi–hover height).

(2) *Terrain collision.* The aircraft collides with the terrain.

(3) *Flight path.* The profile motion of the aircraft center of gravity during flight relative to the horizontal, measured in degrees.

(4) *Terrain slope.* Slope of terrain measured in degrees.

(5) *Aircraft attitude.* The orientation of the aircraft with respect to the horizontal at the instant of impact. The attitude is measured in degrees about the pitch, roll, and yaw axes.

(6) *Impact angle.* The angle between the flight path and the terrain. This angle is identical to the flight path angle for level terrain. For an upslope impact, the terrain slope angle is added to the flight path angle; for a downslope impact, the terrain slope is subtracted. An upslope and downslope impact is shown at figure 3–8.

(7) *Flammable fluid.* Engine fuel, lubricating oil, hydraulic fluid, and so forth.

(8) *Major impact.* That impact which results in the highest acceleration forces being transmitted to the aircraft.

(9) *Gravitational force (g force).* A downward force resulting from gravitational deceleration action on a mass (Newton's second law, F = Ma). This is normally expressed as a one g force.

(10) *Impact force.* A force in any direction resulting from the deceleration of an aircraft. These forces are usually expressed as multiples of the gravitational force; such as, 1g, 2g, and so forth.

Impact forces are resolved into components relative to some reference such as the longitudinal and vertical axes of an aircraft.

(11) *Airspeed.* Indicated airspeed along the flight path (knots).

(12) *Vertical velocity.* Rate of ascent or descent in feet per minute (fpm).

(13) *Ground speed.* Ratio of distance covered to time required relative to ground (knots).

3–10. DA Form 2397–7–R, Part VIII, Maintenance and Material Data

DA Form 2397–7–R (fig 3–9), will be completed for each technical report, as applicable, when any of the following had a role (definite or suspected) as to the cause of the accident. If explanatory remarks are required, use block 6 and letter–size paper for continuation sheets.

a. An act of omission or commission at any maintenance level (to include manufacturing defects). State the specifics in block 6, "Remarks."

b. The failure or malfunction of any system, major component, or part. A separate DA Form 2397–7–R will be completed for each major component or part that failed or malfunctioned and contributed to the accident, or anytime an analysis is to be performed or requested on a part. Only DA Form 2397–7–R pertaining to components or parts that contributed to the accident will be incorporated into the completed technical report of aircraft accident. When analysis of components/parts shows that there was no contribution to the accident, DA Form 2397–7–R pertaining to these items will be retained as work copy documents, but will not be included in the completed Technical Report of Aircraft Accident.

3–11. DA Form 2397–8–R, Part IX, Personal Data

DA Form 2397–8–R (fig 3–10) will be completed for all aircraft accidents requiring a technical report per AR 385–40 (see tables 3–5, 3–6, 3–8, and 3–9). It will be submitted for—

a. Each aviator who occupied a seat with access to the flight controls or an evaluator (SP, IE) occupying a jump seat. For each of these individuals, fill in blocks 1 through 4d, 5, and 8 through 17.

b. Support personnel and non–rated crewmembers whose contributory role in the accident was attributed to duties such as mechanic, crew chief, POL handler, air traffic controller, technical inspector, medical officer, etc. For each of these individuals, fill in blocks 1a, 2a through i, 3g, 3n, 3p, 3q, 4e, 5, 7, 8, 9 (if a crewmember), and 10 through 17.

c. Supervisory personnel who may have contributed to the accident. For these individuals, fill in blocks 1a, 2a through i, 5, and 10 through 17.

d. Any crewmember, when the required laboratory analysis indicated the presence of an unauthorized drug or substance. For each of these individuals, fill in the appropriate blocks as indicated in a and b above, to include block 8.

3–12. DA Form 2397–9–R, Part X, Injury/Occupational Illness Data

DA Form 2397–9–R, (fig 3–11), will be completed for each individual who was injured or sustained an occupational illness as a result of the aircraft accident. The accident investigation board shall reference and comply with AR 40–21. It is mandatory that autopsies be performed on all deceased crewmembers. The protocol will not be included or attached to the accident report when the report is forwarded through the command channels for review, but will be forwarded to the Commander, U.S. Army Safety Center, ATTN: CSSC–ZM, Fort Rucker, AL 36362–5363 for inclusion into the historical copy of the report.

3–13. DA Form 2397–10–R, Part XI, Personnel Protective Escape/ Survival/Rescue Data

DA Form 2397–10–R (fig 3–12) will be completed for crew members aboard an aircraft involved in an accident requiring a technical report, and for all other personnel aboard the aircraft for which the following applies (see tables 3–5, 3–6, 3–8, 3–9, and 3–11 through 3–24 for additional information:

a. Protective/restraint/survival equipment played a role in the causation/prevention/reduction of an injury(s) resulting from the accident.

b. Protective/restraint/survival equipment failed to function as designed or was required but not available or used.

c. Egress/Rescue difficulties were encountered.

3–14. DA Form 2397–11–R, Part XII, Weather/ Environmental Data

DA Form 2397–11–R (fig 3–13), will be completed for all aircraft accidents requiring a technical report according to AR 385–40. This form does not negate the requirement for the substantiating weather data addressed in paragraph 3–17. Weather/Environmental information submitted on DA Form 2397–11–R is the board's best estimate of the actual environmental conditions existing when and where the accident occurred and its role in the accident, if any. The information will be gathered from available sources to include witnesses, surviving crewmembers, etc.

3–15. DA Form 2397–12–R, Part XIII, Fire Data

DA Form 2397–12–R (fig 3–14), will be completed for each technical report of aircraft accident in which fire occurs (table 3–6 also applies).

3–16. DA Forms 2397–13–R, Index A, and 14–R, Index B

DA Form 2397–13–R (fig 3–15) and DA Form 2397–14–R (fig 3–16) will be completed for all aircraft accidents requiring a technical report according to AR 385–40.

3–17. Substantiating Data

a. Instruction. DA Form 2397–13–R, Index A, lists the information that will be appended to the technical report as substantiating data. See figure 3–15 for an example of DA Form 2397–13–R. The information attached to the left side of the report folder will aid in completing the remainder of the 2397 series.

b. Requirements. Tab items 1, 2, 4, 6, 7, and 9 of DA Form 2397–13–R will be submitted with all technical reports. Blocks 3, 5, 8, and 10 through 14 are also required if necessary to explain or substantiate other parts of the report. Additional instructions pertaining to applicability are contained in paragraph *d* below.

c. Special considerations.

(1) *Legibility.* Original copies of substantiating documentation are not required for this report. Duplicates that are completely legible and suitable for reproduction may be appended to the report.

(2) *Extracts.* Extracts or concise quotes of regulations, tasks, performance standards, specifications, and other directives are preferred in lieu of whole source documents to minimize bulk. When used, extracts will include information as to where they appear in their source documents, titles and dates of the documents.

(3) *Highlighting key words and phrases.* Substantiating data referred to by other parts of the report will have key words, phrases, or passages underlined or annotated to facilitate the review of the accident report. Underlining or annotating margins will be used in lieu of felt–tipped markers for this purpose because the fluid dispensed by many of these devices may obliterate the legibility of subsequent copies if they are reproduced from an original marked in this manner.

d. Information items at each TAB on the DA Form 2397–13–R

(1) *TAB 1—Investigation board orders.* A copy of the original orders appointing the board and any amendments will also be appended.

(2) *TAB 2—Weather Data*. The relationship of weather or weather services to an accident is addressed in chapter 2 of this pamphlet. If weather or weather services had no bearing on the outcome of the accident, a brief synopsis of the weather existing before, during, and immediately after the accident, authenticated by the closest weather service activity, will suffice in most cases. Otherwise, if weather or weather services are suspected, the information to be provided should include, but not limited to, the following:

(a) A certified narrative of weather provided by forecaster, briefer, or observer.

Note. Weather data importance should be in consonance with the suspicion of weather as a factor.

(b) A true copy of the forecast or observation from official files; e.g., DD Form 175–1 (Flight Weather Briefing).

(c) Copies of pertinent weather advisories and related forms; e.g., AWS Form 39, Military Weather Warning Advisory, and so forth.

(3) *TAB 3—Certificate of damage/estimated cost of damage.* If total estimated cost to repair the damage does not exceed the aircraft replacement cost specified in TB 43–0002–3, submit a complete ECOD for aircraft damage. The ECOD will include an itemized list of damaged components, number and cost of man–hours, and total cost of repair. Refer to AR 385–40 and Army Master Data File for aircraft component/part accident damage cost criteria. If the aircraft is damaged to the extent it is estimated to be a total loss, a certified statement to that effect, signed by a maintenance officer, will suffice in lieu of an ECOD. For other property damage provide a description of the property damage, and an ECOD, to include civilian property damage.

(4) *TAB 4—Maps and photographs.* A map/sketch depicting the aircraft's flight path leading up to the accident site, preferably plotted on a large scale map, should be appended to the technical report if it will help to clarify the accident sequence of events. Arrows should be placed on the face of the map depicting magnetic north and the wind, with numerical values, which existed at the time of the accident. Should the section of map being used not include an obvious geographical reference and margin data such as distance scales, this type of information should be added. Also, significant events occurring along the depicted flight path should be numbered at the point they occurred and explained by footnotes. The number and types of photographs to be appended to the accident report will be determined by the accident circumstances. Additional guidance concerning photographic coverage of an accident is contained in chapter 2.

(5) *TAB 5—SF 368 (Deficiency reports).* Include a copy of each deficiency report completed as a result of the accident.

(6) *TAB 6—Special technical reports and reports of laboratory analyses.* Append a copy of the results of all fluid sample analyses, teardown analyses, or other laboratory analyses of aircraft related systems.

(7) *TAB 7—DD Form 365–4 (Weight and Balance Clearance).* A DD Form 365–4 showing the conditions existing at the time of the accident will be computed by the investigation board and also appended to the accident report at TAB 7. If weight and/or balance was a factor or suspected factor in the accident, also include a copy of the DD Form 365–4 used by the aircrew at the time of the accident and explain any significant differences in the analysis portion of the narrative.

(8) *TAB 8—Directives, regulations, etc.* Pertinent portions of written documents relating to cause factors will be extracted, underlined/highlighted, and appended to the accident report.

(9) *TAB 9—Medical Data.* Toxicological reports, preferably done by the Armed Forces Institute of Pathology (AFIP), autopsy protocols, and/or other medical data pertinent to the accident will be appended to the accident report. Autopsy protocols and pictures of deceased personnel will not accompany the technical report through review channels. This type of information will be handled in accordance with paragraph 2–4 *g* of this pamphlet.

(10) *TAB 10—Flight planning data.* Append a copy of the flight plan, local clearance forms, or unit's tactical flight log to the accident report if relevant to the accident.

(11) *TAB 11—DA Form 2408–12.* A copy of the DA Form 2408–12 covering the accident flight will be appended to the technical report if it has any bearing on the accident. In cases where crew rest may be an accident cause–related factor, DA Form 2408–12 information pertaining to the same crewmember for the appropriate period preceding the accident should be included.

(12) *TAB 12—DA Form 2408–13.* Append a copy of DA Form 2408–13 to the accident report if maintenance or material deficiencies are discovered.

(13) *TAB 13—DA Form 2408–14 (Uncorrected Fault Record).* Append copies of DA Forms 2408–14 applicable to the accident aircraft if a material problem related to an uncorrected fault is involved.

(14) *TAB 14—DA Form 2408–5 (Equipment Modification Record).* Append copies of applicable DA Forms 2408–5 when necessary to substantiate maintenance errors, omissions, etc., that caused or contributed to the accident.

(15) *TABs 15 through 18—Additional information.* Substantiating data that have a bearing on an accident and are not covered by other information items listed on DA Form 2397–13–R should be appended to this part of the technical report or filed under an additional tab item (tab 16); examples include, but are not limited to the following:

(a) If the training proficiency/level of an individual is an issue, a copy of the training record will be included. The area of deficiency will be highlighted.

(b) Copies of crewmember postaccident flight evaluations.

(c) Copies of DA Form 2028 (Recommended Changes to Publications and Blank Forms) when changes in publications are recommended.

(d) Results of special investigations conducted by individuals/agencies in support of the Accident Investigation Board investigation.

(e) Portions of transcripts of ATC logs, tower tapes, media news accounts, fire, rescue and law enforcement reports, relevant portions of intra–cockpit voice recordings, and so forth.

(f) Copies of DA Form 2408–18 (Equipment Inspection List) when necessary to show compliance or noncompliance with safety–of–flight messages and similar directives or publications.

3–18. Miscellaneous

A list may be beneficial to the local safety point of contact (POC) for actions required prior to the arrival/appointment of the accident investigation board. The guidelines in appendix G can be used to prepare this list.

3–19. Assembly of the accident folder

When all required forms in the DA Forms 2397–R series have been completed and the necessary substantiating data have been collected, the recorder will assemble the information using the instructions listed below.

a. Use a separate manila or similar folder to enclose the forms and substantiating data for each copy. It is suggested that the creases and edges of each folder be reinforced with tape to maintain the integrity of the folders during subsequent handling.

b. File substantiating data under the appropriate tab on the left side of the accident folder and the DA Forms 2397–R series on the right. If the accident report will contain more than one DA Form 2397–R series because of a multiple aircraft event, keep each DA Form 2397–1–R and its associated forms together and file in a manner that will permit view of the "case aircraft" DA Form 2397–1–R and its associated forms first.

c. Tab and index each item on the left and right sides of the folder as shown in figure 3–17.

d. File the completed DA Form 2397–13–R, Index A, on top of substantiating data on the left side of the folder and file the completed DA Form 2397–14–R, Index B, on top of the DA Forms 2397–R series on the right side of the folder. The items to be included as substantiating data are addressed in paragraph 3–17 of this pamphlet. Additional items may be included as determined by the board.

e. The front of the folder will be marked with the following information:

Technical Report of Army Class (A through D) Aircraft Accident' or "Aircraft Ground Accident" if applicable.
Aircraft MTDS and Serial No. (M109A2XXXXX).
Date: (mm,dd,yy of accident).
Location of accident: (DA Form 285, block 11).
Unit: (DA Form 285, block 3).

3–20. DA Form 2397–AB–R, Abbreviated Aviation Accident Report (AAAR)

DA Form 2397–AB–R (fig 3–18) is required for all aircraft ground accidents (regardless of class), Class C, D accidents, Class E and F (turbine engine FOD) aviation incidents. (See tables 3–4 through 3–6 and tables 3–8 and 3–9 for additional information.) This report may also be used to report aviation Class A and B accident in areas of combat operations when the submission of the DA Form 2397 series is deemed not practicable by the senior tactical commander. Also, the AAAR only reduces the Class C and above reporting requirements and should not effect the quality or extent of the accident investigation.

a. Investigation and submission of the DA Form 2397–AB–R will be according to AR 385–40, paragraph 2–8.

b. Submit AAAR in legible hand–printed or typed copy by mail, FAX, courier, by message format, electronic mail, or by other timely means. Work copies on plain paper will be acceptable, but each data element must reference the respective block of the DA Form 2397–AB–R.

(1) The message address is as follows: CDR USASC FT RUCKER AL //CSSC–Z//

(2) The mailing address is as follows: Commander U.S. Army Safety Center ATTN: CSSC–Z, Fort Rucker, AL 36362–5363.

(3) Personal Computer (PC)–to–USASC mainframe computer procedure is as follows: To transmit data to the mainframe computer at the USASC, individuals must have an Army Safety Management Information System (ASMIS) user identification code and password. Individuals must also have a DDN TAC Access Card to be able to use the DDN system. These are available from the U.S. Army Safety Center, Information and Systems Technology Directorate, ATTN: CSSC–ITS, Fort Rucker, AL 36362–5363.

c. For Class A, B and C accidents (those reported on this form), attach all additional information or forms required or deemed appropriate; for example, witness statements/interviews, expanded narratives, lab/CCAD reports, other DA Form 2397 series, additional Personnel Information sections, and additional AAAR forms for involved aircraft other than the case aircraft, and so forth.

Table 3–1
Aviation accident reporting requirements

Type and Classification	Telephonic	DA Form AAAR	DA Form 2397 –R	–1–R	–2–R	–3–R	–4–R	–5–R	–6–R	–7–R	–8–R	–9–R	–10–R	–11–R	–12–R	–13–R	–14–R
Avn A, B	X		X	X	X	X	X	*	*	*	X	*	X	X	*	X	X
Avn C	X	X					*		*			*	*				
Avn D, E, & F		X										*					
Avn Combat A, B [1]	#	X					*		*			*	*		*		
Acft Ground A, B, & C	X	X					*		*			*	*		*		
Acft Ground D, E, & F		X															

Legend for Table 3-1:
*as required by the circumstances
X = mandatory
# = if the operational situation permits
[1] for combat or contingency operations where the submission of the DA Form 2397 series technical report is deemed not practicable by the senior tactical commander.

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT
PART I - STATEMENT OF REVIEWING OFFICIALS
For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-309

1. REVIEWING OFFICIALS COMMENTS

Comment 1:

1. Concur with the findings and recommendations of the accident investigation board.

2. Actions specified in recommendation 2a pertaining to this level of command were implemented.

Richard F. Foreman
RICHARD F. FOREMAN, MAJ, AV, Commanding

Comment 2:

1. Concur with the findings and recommendations of the accident investigation board.

(See continuation sheet)

2. APPROVING AUTHORITY COMMENTS

1. Concur with findings and recommendations of the accident investigation board and comments of the reviewing officials.

2. Actions recommended by the board pertaining to higher headquarters are considered adequate. This command has no further recommendations.

BRIAN D. DIRECTOR, MG, Commanding

a. Signature: Brian D. Director

3. DEPARTMENT OF ARMY REVIEW

Findings and recommendations of the accident investigation Board are considered correct and appropriate. DA level recommendations have been forwarded to the appropriate agency for action. Facts and circumstances pertaining to this accident were published in the Jan 94, Vol 23, No. 2 issue of the Flightfax. The report data is approved for inclusion into the USASC data base.

HENRY P. PRESERVER, LTC, AV, XO

a. Signature: Henry P. Preserver

4. CASE NO.	a. Date (YYMMDD)	b. Time	c. Acft Serial No.
	931001	1000	9212345

DA FORM 2397-R, JUL 94

Figure 3-1. Sample of a completed DA Form 2397–R, Part I, Statement of Reviewing Officials

Legend for Figure 3-1;

Completion instructions for DA Form 2397–R, Part I, Statement of Reviewing Officials

1. Block 1. The reviewing official(s) will indicate the official's organization and will:

a. State concurrence or nonconcurrence with the technical report. Any nonconcurrence will be fully explained.

b. Report actions taken as well as recommendations for additional action by higher headquarters or other Army commands. Attach, as enclosures to this form, copies of correspondence, forms, and other data requiring additional action.

c. Define those area(s) recommended for improvement/remedial action by the investigating board that are beyond the resources available to the command and so indicate in the forwarding endorsement to the approving authority.

d. Authenticate comments with signatures and appropriate signature block at the close of each reviewing official's remarks.

e. Higher command reviewing official(s) will indicate the official's organization and enter the same information as a through d above as comment number 2, 3, etc.

2. Block 2. The approving authority will indicate his command and approval or disapproval of the report. Reasons for disapproval and/or additional actions directed will be reported. The approving authority will make note of those areas recommended for improvement/remedial action by the accident investigation board or reviewing officials on which action can or will be completed by the approving headquarters. If corrective action is beyond the purview or capability of the approving authority, this will be stated. For Block 2a, the approving authority's authentication will be entered.

3. Block 3. Block 3 is reserved for USASC use and will be completed to show coordination/follow–up taken in response to recommendations requiring DA–level action.

4. Block 4. Enter the case number as shown on the DA Form 2397–1–R.

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT
PART II - SUMMARY

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL CSOCS-309

1. a. Classification [X] A [ ] B [ ] C	b. Category [X] Flight [ ] Flight Related	2. TYPE EVENTS	a. 80	b. 85	c.
3. PERIOD OF DAY [ ] Dawn [X] Day [ ] Dusk [ ] Night	4. a. On Post [ ] Yes [X] No	b. On Airfield [ ] Yes [X] No			
5. NEAREST MIL INSTALLATION Fort Sand, CA		6. NO. OF ACFT INVOLVED 1			
7. LOCATION a. City: Level Oaks	b. State: CA	c. Country:			
8. a. Acft MTDS: UH-60A	b. (1) Orgn Acft Asgd: CoC,2-14 Avn Regt	(2) UIC: WABCCO	c. Instal Acft Asgd: Fort Sand, CA		

9. ORGN/CHAIN OF CMD INVOLVED AND ACCOUNTABLE

		Orgn Involved	Chain of Cmd	Chain of Cmd	Chain of Cmd	Chain of Cmd	MACOM
a. ORGN/Chain of CMD Involved	(1) Unit	Co C	2-14 Avn Regt	3d Avn Bde	13th AR Div	XXIII Corps	COCOM
	(2) UIC	WABCCO	WABCAA	WABCFF	WDEFAA	WEFGAA	WCBAAA
b. ORGN/Chain of CMD Accountable		Orgn Accountable	Chain of Cmd	Chain of Cmd	Chain of Cmd	Chain of Cmd	MACOM
	(1) Unit						
	(2) UIC						

10. a. Estimated Cost [ ] Total Loss			
(1) Acft Damage Cost	$1,800,000	Owner A	
(2) Repair M/Hrs Cost	$ 19,200	No. M/Hrs 1200	
(3) Other Damage Mil	$ 0	Owner	
(4) Other Damage Civ	$ 0	Owner	
(5) Injury Cost	$1,100,000		
(6) Total Cost This Acft	$2,919,200	15. USABLE FUEL ABOARD ACFT:	
b. Total Cost Multiple Acft	$		

11. SURVIVABILITY	12. IN-FLT ESCAPE	13. FIRE	14. POSTCRASH ESCAPE DIFFICULTIES
[ ] Survivable	[ ] Ejection	[ ] None	[X] Yes
[X] Partially Survivable	[ ] Bailout	[ ] Inflight	[ ] No
[ ] Nonsurvivable	[ ] Not Accomplished	[X] Post-crash	[ ] NA
[ ] Acft Missing	[X] NA	[ ] Other	

a. At Takeoff: 2255	b. At Time of Emerg: 1405
c. At Acdt or Term: 1363	d. Type Fuel: JP8

16. GENERAL DATA	Yes	No
a. Flammable Fluid Spillage	X	
b. (1) Night Visual Aids Used		X
(2) Specify Type		
c. Fit Data Recorder Installed		X
d. Field Training Exercise Involved		X
e. Heads-Up Display in Use		X
f. Emergency Locator Transmitter Installed		X

17. Flight Plan: [X] VFR [ ] IFR [ ] None [ ] NA

18. MISSION: a. Type: S; b. Operations: [X] Single-ship [ ] Multi-ship

19. INJURIES (Number)	Fatal (A)	Disabling (B - E)	Nondisabling (F-G)	Missing (H)	Not injured (J)
a. Occupants Military	1		2		
b. Occupants Other					
c. Non-Occupants Mil					
d. Non-Occupants					
e. Total This Acft	1		2		
f. Multiple Acft Event					

20. TERRAIN OF CRASH SITE *(More than one may apply)*

a. General Characteristics [ ] Mountain [ ] Desert [ ] Rolling [X] Flat [ ] Water

b. Surface at Crash Site [ ] Prepared [ ] Ice [X] Sod [ ] Snow [ ] Soggy [ ] Water

c. Crash Site Grade [X] Level [ ] Slope ———— Degrees

d. Obstacles at Crash Site [ ] Stumps [X] Trees [ ] Bldg [ ] Wires [ ] Rocks/Boulders [ ] Other

21. FLIGHT DATA	Flight Duration	Phase of Operation	Altitude AGL	Altitude MSL	Airspeed KIAS	Heading (Compass)	Aircraft Weight	Overgross Yes	Overgross No
a. Planned Data	Hr 02 Tns 0	G	VAR	1500	120	VAR	18520		X
b. When Emergency Occurred	Hr 01 Tns 0	G	1000	1500	120	270	17670		X
c. Accident or Termination	Hr 01 Tns 1	K	0	500	0	120	17628		X

22. ACCIDENT CAUSE FACTORS *(Enter a D, S, or U in appropriate blocks to identify definite, suspected, or undetermined causes)*

a. Personnel	D, S, or U	Personnel (Continued)	D, S, or U
(1) Flight Crew: Duty PC	D	(3) Supervisory Duty	
Duty		Duty	
Duty		(8) Other Duty	
(2) Ground Crew: Duty		b. Materiel Failure/Malfunction	D
Duty		c. Environmental	

23. SEQUENCE *(Factual accident sequence from onset of emergency through termination of flight. Use additional sheet if required.)*

(See attached sheet)

24. AVN SAFETY OFFICER	a. Name, Rank, and Orgn	b. Signature
	THOMAS M. PREVENTOR, CW3 Co C, 2-14 Avn Regt	Thomas M. Preventor

25. CASE NO.	a. Date (YYMMDD)	b. Time	c. Acft Serial No.	26. OTHER ACFT SERIAL NO.
	931001	1000	9212345	

DA FORM 2397-1-R, JUL 94

Figure 3-2. Sample of a completed DA Form 2397–1–R, Part II, Summary

DA Form 2397-1-R (Cont'd) -- 93100110009212345

23. Sequence.

While in cruise flight at 1,500 feet MSL and 120 KIAS, tail rotor control was lost. Autorotation was initiated to a large, open area. At approximately 200 feet AGL, the aircraft entered a vertical descent and settled into trees approximately 40 meters short of the intended landing point. The PC sustained _____.

Figure 3-2. Sample of a completed DA Form 2397–1–R, Part II, Summary—Continued

Legend for Figure 3-2;
Completion instructions for DA Form 2397–1–R

1. Blocks 1a and 1b. Check the appropriate box to indicate the appropriate classification and category for the accident. Accident classifications and categories are defined in AR 385–40.

Note: Accident classification is based solely on property damage or injury/illness severity; e.g., fatal, permanent partial disability, etc., IAW AR 385–40, not injury cost.)

2. Block 2. Refer to Table 3–2 for accident event codes. Appendix F contains explanations of events listed. Select the type event(s) that best categorize(s) the accident and enter code(s) in space(s) provided. More than one event may apply and up to three may be recorded. The event that best describes the accident should be listed first.

3. Block 3. Check the appropriate box. Dawn is that period of time between beginning morning nautical twilight (BMNT) and official sunrise. Dusk is that period of time between official sunset and end evening nautical twilight (EENT).

4. Block 4. Check the appropriate box. Tactical landing zones under positive air traffic control; e.g., Corps instrumented airfield, Division's VFR helipad, stagefields, and support bases are considered "on post" and "on airfield" for reporting purposes. Also, aircraft accidents occurring on joint–use civil airports and on civilian airports with Reserve component facilities are considered "on post" and "on airfield" when there is intent to use the military facilities on that airport; i.e., visit the unit, acquire fuel, conduct training, etc.

5. Block 5. Enter name of military installation where the accident occurred or the nearest military installation.

6. Block 6. Enter the number of aircraft that were involved in the accident. Do not include damaged aircraft that were not being operated at the time of the accident. Ensure that the number entered in this block corresponds with the number of DA Forms 2397–1–R submitted with the technical report. Paragraph 3–4 specifies when additional DA Forms 2397–1–R are required.

7. Block 7. Enter the name of the closest city and state to the accident site. Identify the country if outside the United States.

8. Block 8. Enter appropriate information for the aircraft addressed by this form. "Organization aircraft assigned" and "UIC" pertain to the organization which has the aircraft in its inventory as recorded in the property records or a hand receipt, whichever is applicable. Enter the installation's name where the aircraft was assigned.

9. Block 9.

a. **Block 9a.** Beginning in the left column under "Organization Involved," enter the six digit UIC and abbreviated titles of the lowest level aviation unit, and chain of command, involved in the accident up through is major command.

b. **Block 9b.** If it is determined that an activity other than the involved unit is deemed the accountable for the accident, enter the six digit UIC and abbreviated title of that unit and chain of command up through the major command and explain in the analysis paragraph of DA Form 2397–3–R. If the Unit is the same as listed in Block 9a, leave blank. Further guidance for determining accountability is contained in AR 385–40, paragraph 1–6.

10. Block 10.

a. **Block 10a.** If the aircraft identified in block B was damaged beyond economical repair limits, missing, or abandoned, check the box indicating total loss. Insert the replacement cost of the aircraft obtained from TB 43–0002–3 in the space provided for the aircraft damage cost and leave the spaces for aircraft repair man–hours and cost blank. If the aircraft was repairable, enter in the spaces provided an estimated material cost of damage, number of man–hours, and a dollar amount for total man–hours to repair the aircraft based on the standard labor rate per hour specified in AR 385–40, paragraph 2–11. Estimated cost of damage and man–hours required to repair the aircraft should be obtained from the organization's support maintenance. When more than one aircraft is damaged and the other aircraft does not meet the "intent for flight" criteria contained in AR 385–40, enter the total dollar cost of damage and man–hours to repair the other aircraft or other military property in the "Other damage mil" space. Report dollar value of civilian property damage; i.e., damaged buildings, destroyed crops, broken utility poles and lines, livestock, etc., in the space "Other damage civ" provided. Report the total dollar value of all injuries, as recorded in Block 19, DA Forms 2397–9–R (Part X—Injury/Occupational/Illness Data). The cost is computed using the standard injury and illness costs contained in Table 2–1, AR 385–40. Injuries or fatalities to non–DOD personnel; i.e., private citizens, are not included in accident injury cost. Show ownership of all damage by entering one of the codes listed in Table 3–3.

b. **Block 10b** will be completed only for accidents involving a multiple aircraft event. The information will be entered only on the DA Form 2397–1–R applying to the "case aircraft" identified in block 25. The cost entered in block 10b will show the total cost of all aircraft, property damage, injury, and occupational illness attributable to the accident.

11. Block 11. Check the appropriate box. Two factors are required for an accident to be survivable. Crash forces imposed upon the inhabitable area of the aircraft must be within the limits of human tolerance (see Appendix C), and all portions of the inhabitable area must remain reasonably intact and occupiable. If these criteria are met for at least one, but not all seat/litter positions, the accident is partially

survivable. If no seat positions meet the criteria, the accident is non–survivable. Fatal injuries or occupancy of an inhabitable area is not the criteria for determining survivability of an accident.

12. Block 12. Check the appropriate box to indicate the method or attempted method of inflight escape. This block does not apply to occupants who fell out of the aircraft or were ejected/thrown out without a parachute. Check "NA" if the crew/aircraft is not equipped with parachutes/ejection seats.

13. Block 13. For fires beginning before initial impact or breakup of the aircraft, check "inflight." For fires beginning after the initial crash impact has begun, check "postcrash." Check both boxes if in–flight and postcrash fires occurred. If"inflight," "postcrash," or "other" boxes checked, ensure that a DA Form 2397–12–R is completed. For the purpose of this block, movement of the aircraft under its own power is considered inflight.

14. Block 14. Check the "yes" block if any occupant had difficulty or required assistance during egress. Leave blank for non–survivable accidents with no survivors.

15. Block 15. Enter in blocks a, b, and c the total amount of fuel on board within the aircraft fuel system, in pounds, for the times indicated. Enter in block d the type fuel with which the aircraft was last serviced.

16. Block 16. Check appropriate blocks and record supporting data on appropriate forms.

a. **Block 16a.** If "yes," enter types and quantity in block 9e of DA Form 2397–6–R.

b. **Block 16b.** If "yes," identify the type night visual aid used in block 16b(2). If night visual aids were a factor in the accident, discuss in the findings and "special investigation" portion of the narrative (DA Form 2397–3–R).

c. **Block 16c.** Check "yes" if a flight data recorder (FDR) was installed and explain in the narrative portion of the report.

d. **Block 16d.** If "yes," explain and enter name of field training exercise (FTX) in "the preflight phase" of the narrative (DA Form 2397–3–R).

e. **Block 16e.** Check "yes" only if heads up display (HUD) was in use at time of accident.

f. **Block 16f.** If an emergency locator transmitter (ELT) was installed, check "yes." Explain any malfunctions in the narrative (DA Form 2397–3–R).

17. Block 17. Check the appropriate box to indicate under what flight rules the aircraft was being operated at the time of the accident. Check "none" if the aircraft was operated without a flight plan or without being recorded on appropriate flight dispatch records.

18. Block 18. Use the mission symbols used on the DA Form 2408–12 or as specified AR 95–1. For maintenance operational checks enter "S." If none, enter "NA." If the mission was classified enter "Z." If the mission symbol is undetermined, enter "U." Also, check the appropriate box to indicate if the mission was a single ship or multi–ship operation.

19. Block 19. Enter numbers of personnel in the appropriate boxes. Columns B–E combine the injuries reported in blocks 1b through 1e of DA Forms 2397–9–R and columns F–G combine those injuries reported in blocks 1f and 1g of DA Forms 2397–9–R. Ensure the number of personnel reported as injured, agrees with the number of injured personnel reported on DA Forms 2397–9–R. Block 19f, "Multiple acft event," is completed only on the DA Form 2397–1–R for the "case aircraft" when reporting accidents involving multiple aircraft.

20. Block 20. This block is used to describe the terrain at and around the crash site:

a. **Block 20a.** "General characteristics" pertains to the dominant terrain features surrounding the accident site. More than one may apply.

b. **Block 20b.** Refers to surface conditions on which the aircraft made its ground run and/or came to final rest. More than one type surface may apply.

c. **Block 20c.** Pertains to the terrain grade on which the aircraft came to final rest. If "slope" is checked, specify degrees. Leave blank if not applicable.

d. **Block 20d.** Pertains to obstacles located in the vicinity of the accident site that may have influenced the accident. More than one may apply.

21. Block 21. Flight Data. "Flight duration;" enter hours and tenths of hours; "Phase of operation" enter appropriate code(s) (maximum of three) from the list at Table 3–4."Overgross" determinations are not in reference to design gross weight, but are in reference to the conditions under which the aircraft was being operated at the time of the accident.

a. **Block 21a.** For planned data, enter the flight parameters that were used during preflight planning for that segment of the mission profile in which the emergency or accident occurred. "Variable" (var) may be used where heading, altitude and airspeed are constantly changing due to mission requirements.

b. **Block 21b.** For emergency data, enter the actual flight parameters at the time of the emergency.

Note: The use of the term "Emergency" in this pamphlet refers to "any occurrence/situation wherein the personnel involved sense a need to take appropriate measures to reduce the effects of the occurrence/situation or prevent injury, property damage, or further materiel failure."

c. For accident or termination data, enter flight parameters at the time when the major impact/accident occurred or accident sequence stops if no major impact occurred (could be same as emergency data).

22. Block 22. Place a "D," "S," or "U" in the appropriate space provided if personnel, materiel, or environmental factors definitely contributed, are suspected to have contributed, or the role in the accident could not be determined. Identify personnel by duty codes from the list at Table 3–5. It is essential that each entry in block 22 be supported by the findings reported in blocks 1 and 2 of the DA Form 2397–2–R, the analysis portion of the DA Form 2397–3–R, and the cause relationship block elements checked on DA Forms 2397–7–R (Part IX—Personal Data), 8–R, and 11–R (Part XII—Weather/Environmental Data).

23. Block 23. Enter a concise summary of the accident sequence of events from the first indication of the emergency through termination of the accident sequence. Avoid conclusions of the investigation as to cause of the accident. Continue on letter–size bond paper as necessary; however, do not exceed a total of 15 lines of typewritten information.

24. Block 24. The aviation safety officer (ASO) of the unit involved in the accident will normally review the completed report and sign in this block. The ASO's signature does not indicate or imply his concurrence or nonconcurrence with the report but only that he has reviewed and is aware of the contents of the report.

25. Block 25. Enter the case number. The case number is a 17–digit numerical entry consisting of a 6–digit date (Block 24a), 4–digit hour of the day (Block 24b), and the 7–digit tail number the aircraft (Block 24c) that will be placed on each form of the DA Form 2397–R series accompanying the report, as indicated in table 3–6.

26. Block 26. If the accident involves a multiple aircraft event, block 26 will be completed only on the DA Forms 2397–1–R, addressing aircraft other than the "case aircraft." Leave blank if it is a single aircraft accident.

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT
PART III - FINDINGS AND RECOMMENDATIONS
For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYSMBOL
CSOCS-309

1. FINDINGS AND RECOMMENDATIONS *(attach additional sheet, if required)*

FINDING 1 (Present and Contributing: Materiel Failure):

While at 1,500 feet MSL and 120 KIAS in cruise flight, the UH-60A had a failure of the input bevel gear (P/N 70357-06314-101) of the intermediate gearbox. The continuity of the tail rotor drive system was interrupted, causing a loss of effective antitorque control. The gear failed because of inadequate quality control on the part of the manufacturer. That is, the manufacturer failed to detect a machining defect which resulted in stress concentrations on the bevel gear and the shearing of three gear teeth.

RECOMMENDATION 1:

a. Unit-Level Action: None.

b. Higher-Level Action: None.

c. DA-Level Actions:

(1) Program Executive Officer - Aviation take action to have the manufacturer's bevel gear machining process reviewed and appropriate action initiated, as warranted, to improve the machining process and the quality control process.

(2) Commander, U.S. Army Safety Center, inform interested agencies of the facts and circumstances surrounding this accident and the lessons learned.

(See continuation sheet)

2. CODED SUMMARY OF ACCIDENT FINDINGS, SYSTEM INADEQUACIES, AND RECOMMENDATIONS

a. Personnel		(5) Mistake/Error Code	System Inadequacies	Remedial Measures/Recommendations		
(1) Duty: PC	(2) Role: [X] D [ ] S		1: 15	1: U05	2: H05	3:
(3) Phase of Operation: K	(4) ATM Task No.: NA	P01	2:	1:	2:	3:
			3:	1:	2:	3:
b. Personnel		(5) Mistake/Error Code				
(1) Duty	(2) Role: [ ] D [ ] S		1:	1:	2:	3:
(3) Phase of Operation	(4) ATM Task No.		2:	1:	2:	3:
			3:	1:	2:	3:
c. Personnel		(5) Mistake/Error Code				
(1) Duty	(2) Role: [ ] D [ ] S		1:	1:	2:	3:
(3) Phase of Operation	(4) ATM Task No.		2:	1:	2:	3:
			3:	1:	2:	3:
d. Materiel		(4) Failure Code				
(1) Role: [X] D [ ] S	(2) Phase of Operation: G		1: 13	1: A05	2: A10	3:
(3) Failed Part Number: 70357-06314-101		M12	2:	1:	2:	3:
			3:	1:	2:	3:
e. Environmental		(3) Condition Code				
(1) Role: [ ] D [ ] S	(2) Phase of Operation		1:	1:	2:	3:
			2:	1:	2:	3:
			3:	1:	2:	3:

3. CASE NO.	a. Date *(YYMMDD)*	b. Time	c. Acft Serial No.
	931001	1000	9212345

DA FORM 2397-2-R, JUL 94

Figure 3-3. Sample of a completed DA Form 2397–2–R, Part III—Findings and Recommendations

DA Form 2397-2-R (Cont'd) -- 93100110009212345

FINDING 2 (Present and Contributing: Human Error - Individual Failure):

During an autorotation following the loss of tail rotor thrust, the UH-60A PC failed to properly scan his instruments. That is, he allowed his airspeed to decrease below the recommended minimum for autorotation IAW paragraph 9-23, TM 55-1520-237-10, when he concentrated on his intended point of landing. As a result, the autorotation terminated in trees, 40 meters short of the intended landing area, with major damage to the aircraft and fatal injuries to the PC. The PC's improper scan was the result of his excitement after the onset of the emergency. He was focused outside the cockpit at the intended landing area to the exclusion of monitoring his airspeed.

RECOMMENDATION 2:

a. Unit-Level Action: Commander, Company C, 2d Aviation Battalion, inform assigned personnel of the circumstances involved in this accident and the lessons learned.

b. Higher-Level Action: Commander, 2d Aviation Battalion, direct increased emphasis on emergency procedures during training and standardization evaluations.

c. DA-Level Action: None.

THE FINDING LISTED BELOW DID NOT CONTRIBUTED TO THIS ACCIDENT. HOWEVER, IF LEFT UNCORRECTED, IT COULD ADVERSELY AFFECT THE SAFETY OF AVIATION OPERATIONS.

FINDING 3 (Present but not Contributing):

Upon receiving the Mayday call from the aircraft, the airfield control tower was unable to notify the activities connected to the primary crash alarm system via the direct wire intercom circuit because the circuit was inoperative. As a result, _____.

RECOMMENDATION 3:

a. Unit-Level Action: None.

b. Higher-Level Action: Commander, Sand AAF, take positive command action to ensure tower personnel comply with the SOP requirements to daily test the crash alarm circuitry.

c. DA-Level Action: None.

Figure 3-3. Sample of a completed DA Form 2397–2–R, Part III—Findings and Recommendations—Continued

Legend for Figure 3-3;
Completion instructions for DA Form 2397–2–R

1. Block 1. Instructions for narratively reporting findings and recommendations. Each cause–related finding must be substantiated by the written analysis portion of DA Form 2397–3–R. As a minimum, the following elements of information will be reported for each finding in the order stated.

Findings

a. An explanation of when and where the error, materiel failure, or environmental factor occurred in the context of the accident sequence of events; e.g., "during preflight," "takeoff," "while driving," "while employing," etc.

b. Identification of the individual involved by duty position; or the name and part number or national stock number (NSN) of the part, component, or system that failed; or a description of the environmental factor, as appropriate.

c. For human error, identification of the task or function the individual was performing and an explanation of how it was performed improperly. Refer to appendix B for mistake/error categories. The error could be one of commission or omission; e.g., an individual performed the wrong task, incorrectly performed the correct task, or failed to perform a required task or function. In the case of a materiel failure, identify the mode of failure; e.g., corroded, burst, twisted, decayed, etc.

d. Identification of the directive (i.e. ATM, SOP, FM) or common practice governing the performance of the task or function. In lieu of a written directive, the error may represent performance that is contrary to common practice.

e. An explanation of the consequences of the error, materiel failure, or environmental effect. An error may directly result in damage to equipment or injury to personnel, or it may indirectly lead to the same end result. A materiel failure may have an immediate effect on equipment or its performance, or it may create circumstances that cause errors resulting in further damage/injury inevitable.

f. Identification of the reasons (system inadequacy(ies)) the human, materiel, environmental conditions caused or contributed to the accident. Refer to the list and examples of system inadequacy(ies) provided in appendix B.

g. A brief explanation of how each reason contributed to the error, materiel failure, or environmental factor.

h. Instructions for reporting findings that did not cause or contribute to the accident, but did adversely affect the severity of the accident results. The board should report those factors that contributed to the severity of injury or extent of damage. Personnel injuries attributable to defects in life support equipment, personnel protective clothing and equipment or crashworthiness design should also be summarized as findings in this category. Injuries sustained from failure to use provided equipment, i.e., seat belts, must be also be addressed. The findings and recommendations fitting this category will be separated from those that caused the accident and will be preceded by the following statement: THE FINDING(S) LISTED BELOW DID NOT DIRECTLY CONTRIBUTE TO THE CAUSAL FACTORS INVOLVED IN THIS ACCIDENT; HOWEVER, IT (THEY) DID CONTRIBUTE TO THE (SEVERITY OF INJURIES) OR (ACCIDENT DAMAGES).

i. Instructions for reporting findings that did not cause or contribute to the accident nor to the severity of injuries. The board should report errors, materiel failures, or other hazards that did not contribute to the accident but have a high potential for causing other accidents or adversely affecting the safety of aviation operations if not corrected. Reporting these deficiencies will ensure they receive the attention of commanders throughout the chain of command to include Department of the Army staff safety personnel. The findings and recommendations fitting this category will be separated from those that caused the accident, those that did not cause the accident but contributed to the severity of injuries, and will be preceded by the following statement: THE FINDING(S) LISTED BELOW DID NOT CONTRIBUTE TO THIS ACCIDENT. HOWEVER, IF LEFT UNCORRECTED, IT (THEY) COULD ADVERSELY AFFECT THE SAFETY OF AVIATION OPERATIONS.

Recommendations. Each finding will be followed by recommendations having the best potential for correcting or eliminating the reasons (system inadequacy(ies) for the error, materiel failure, or environmental factor that caused or contributed to the accident. Recommendations will not focus on punitive steps addressing an individual's failure in a particular case. To be effective at preventing accidents in the future, recommendations must be stated in broader terms. Refer to the list of remedial measures in appendix B. The board should not allow the recommendation to be overly influenced by existing budgetary, material, or personnel restrictions. In developing the recommendations, the board should view each recommendation in terms of its potential effectiveness; i.e., design improvement of a part that has a history of recurring failure is a better solution than recommending procedures to accommodate the deficiency. Each recommendation will be directed at the unit, command, or activity having proponency for and which is best capable of implementing the actions contained in the recommendation. The actions required at unit level, higher level, and Department of the Army levels of command will be addressed by each recommendation. If one or more of these three command levels had no action requirement, a negative report is required; e.g., "Department of the Army" level actions: None. "Unit level," "Higher level," and "Department of the Army" levels of action, as used in this context, respectively refer to the unit deemed most responsible for the accident: the unit's chain of command, up to and including major Army command (MACOM), and DA–level activities. In cases where a MACOM is the highest level proponent for a recommended action having Army–wide application, the MACOM will be listed in the "Department of the Army level" category.

2. Block 2. Enter a coded summary of the findings and recommendations to include duty, role, phase of operation, mistake/errors, aircrew training manual (ATM) tasks, system inadequacy(ies). Blocks 2a, 2b, and 2c pertains to personnel error, block 2d pertains to materiel failure or malfunction, and block 2e pertains to environmental effects or influence. All entries in block 2 will be consistent with and supported by the findings reported in block 1.

a. **Block 2a(1), Duty.** Enter the code for the individual's duty position at the time the mistake/error was made. Refer to Table 3–5 for codes to be used.

b. **Block 2a(2), Role.** Check "D" for definite, or "S" for suspected to indicate the contributing role of this individual.

c. **Block 2a(3), Phase of Operation.** Enter the code for the phase of operation that was in progress at the time the mistake/error occurred (may be different from emergency or accident phase of operation). Refer to Table 3–4 for codes to be used.

d. **Block 2a(4), ATM Task.** Enter the ATM task number being performed at time the mistake/error was made. Enter "NA" if no ATM Task applies.

(Note: For codes to be used for mistake/errors, system inadequacy(ies), remedial measures, materiel failures, and environmental conditions, refer to Table 3–7 and/or appendix B. Also prefix remedial codes with "U" for unit, "H" for higher, and "A" for DA, to indicate the level of command, the remedial action is directed.)

Note: An abbreviated list of the codes and associated mistakes/errors, materiel malfunctions, environmental conditions, system inadequacy(ies) and remedial measures is provided at Table 3–7. Appendix B contains expanded descriptions and examples of the abbreviated codes.

e. **Block 2a(5), Mistake/error.** In the space provided, enter the code of the mistake/error that best categorizes the error made by this individual.

f. **System inadequacy(ies).** In the spaces provided, enter the numerical codes of the system inadequacy(ies) that caused or permitted the mistake/error to become an accident cause factor. If there are

more than three system inadequacy(ies) associated with the first mistake/error, skip the second duty and mistake/error entries and continue to list the additional system inadequacy(ies) spaces.

g. **Remedial measures.** In the spaces provided to the right of each system inadequacy(ies), enter the codes for the remedial measures selected to correct that specific system inadequacy.

h. Continue the entries in blocks 2a, b, and c until all personnel who made errors causing or contributing to the accident, specified in the findings of block 1 above, have been coded. If number of entries exceeds space available, use blocks 2a, b, and c of an additional DA Form 2397–2–R to continue entries. For each duty code entered in blocks 2a, b, and c, ensure that a DA Form 2397–8–R is completed for each individual.

i. **Block 2d, Materiel.** An entry is required for all materiel failure/malfunction(s) that caused or contributed to the accident. If more than one materiel failure was involved, use block 2d of an additional DA Form 2397–2–R to continue entries.

j. **Block 2d(1), Role.** Check "D" for definite, or "S" for suspected to indicate the materiel role in the accident.

k. **Block 2d(2), Phase of Operation.** Enter the code for the phase of operation that was in progress at the time of failure/malfunction. Refer to Table 3–4 for codes to be used.

l. **Block 2d(3), Failed Part Number.** Enter the manufacturer's part number. The number should coincide with the part number listed in block 3c of DA Form 2397–7–R.

m. **Block 2d(4), Failure code.** Enter the code that best describes the material failure category.

n. **System inadequacy(ies).** Enter the codes of the system inadequacy(ies) that cause or permitted the materiel failure/malfunction to become an accident cause factor. If system inadequacy(ies) identifying improper maintenance are selected, such as system inadequacies 13 and 14, and the duty code of the individual(s) can be identified, a resultant finding should be written as a mistake/error and considering the failure/malfunction as a result of the mistake/error instead of a materiel failure. The mistake/error would then be recorded in block 2a, b, and/or c.

o. **Remedial measures** Enter codes for remedies in the spaces located to the right of each system inadequacy(ies).

p. **Block 2e, Environmental.** This block is to summarize environmental conditions that had an adverse affect on human or equipment performance as related to the accident. Examples include unpredictable weather phenomena (wind/turbulence) resulting in airframe damage; unsuitable work surface/space (unavoidable ditching in ocean or having to land in trees during forced landing); bird strikes damaging aircraft; illumination (too much or too little), etc. For the environment to be considered to have caused or contributed to an accident, it must have been avoidable or unknown at the time of the accident. If the environment does not meet the criteria, a mistake/error of failure to compensate for known or suspected conditions must be considered. If more than one environmental factor was involved, use block 2e of an additional DA Form 2397–2–R to continue entries.

q. **Block 2e(1), Role.** Check "D" for definite, or "S" suspected to indicate the environmental role in the accident.

r. **Block 2e(2), Phase of operation.** Enter the code for the phase of operation that was in progress at the time the environmental factor caused or contributed to the accident.

s. **Block 2e(3), Environmental code.** Enter the code for the environmental factor.

t. **System inadequacy(ies).** Enter the codes of the system inadequacy(ies) that caused or permitted the environmental factor to become an accident cause.

u. **Remedial measures.** Enter remedial measure codes in the spaces located to the right of each system inadequacy(ies).

3. Block 3. Enter the case number as shown on the DA Form 2397–1–R.

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT
PART IV - NARRATIVE
For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL CSOCS-309

1. NARRATIVE ACCOUNT OF INVESTIGATION *(Use format shown in DA Pamphlet 385-40)*

1. History of Flight.

a. Preflight phase. On 29 September 1993, the unit received a service mission from 2-14 Aviation Regiment Operations. The purpose of the mission was to _____. The pilot-in-command (PC), CW3 Peter M. Pilot, and pilot (PI), CW2 Ronald A. Helper, were notified at 1600, 30 September 1993. Their preflight planning _____. There was not sense of urgency associated with the mission or delays before departure.

b. Flight phase. The aircraft departed on the mission at 0900, 1 October 1993. It was a routine flight until 0958 when an in-flight emergency occurred. During autorotative descent, _____.

c. Postflight phase. The aircraft came to rest on its left side with the engines running _____. The PI and crew chief (CE) exited through the right cargo door unassisted. The PC exhibited no signs of life _____. A small grass fire started in the vicinity _____. The CE used a portable fire estinguisher _____. A medical evacuation (MEDEVAC) helicopter evacuated the crewmembers to Theater Army Hospital at 1030.

2. Human Factor Investigation:

a. Personal Background Information.

(1) CW3 Pilot, the PC, entered the U.S. Army on 18 May 1978, at Hanakui, Hawaii. He completed flight school on _____. His prior duty assignments were _____. He was qualified in the following aircraft: _____. He graduated from the UH-60 Instructor Pilot Course _____. There was no evidence of safety violations or Flight Evaluation Board actions. He had accumulated 1,280 hours in the UH-60A, of which 29 hours were flown in the last 3 months. He _____.

(2) CW2 Helper, the PI, _____.

b. Personnel Management.

(1) The PC was assigned to Company C on _____. He was a Flight Activity Category (FAC) 1, Aviator. He completed Readiness Level (RL) 1 training on _____. He spent approximately 20% of his time working on extra duties. The PC was highly regarded by his _____. The PC's sleep and dietary habits _____. The PC was on duty _____. The PC was physically qualified to perform the mission. During the accident sequence the PC sustained fatal injuries _____.

(2) The PI was assigned to _____.

c. Aircraft Suitability. The accident aircraft was suitable for the mission _____.

d. Communications/Air Traffic Services. Investigation revealed not a factor.

(See continuation sheet)

2. CASE NO.	a. Date (YYMMDD)	b. Time	c. Acft Serial No.
	931001	1000	9212345

DA FORM 2397-3-R, JUL 94

Figure 3-4. Sample of a completed DA Form 2397–3–R, Part IV—Narrative

DA Form 2397-3-R (Cont'd) 93100110009212345

3. Materiel Factors Investigation.

a. Aircraft Airworthiness. UH-60A 92-12345 was airworthy with the exception of the intermediate gearbox input bevel gear (P/N 70357-06314-101). The discrepancy could not be identified without disassembly of the _____ until after failure _____.

b. Flight Data Recorder. Aircraft was not equipped with a flight data recorder.

c. Airframe. Investigation revealed not a factor.

(Continue through Fire subparagraph)

4. Analysis. After analyzing the human, materiel, command, and environmental data collected during the investigation, the Accident Investigation Board concluded the accident was caused by materiel failure and human error. The rationale for this conclusion is as follows:

a. Command Data. The command policies and procedures were evaluated and determined to be a present but not contributing factor in that the Sand Army Airfield primary crash alarm system was inoperative due to _____. The inoperative system went undetected because _____.

b. Environmental Factors. The environment was not a cause factor in that the conditions were known to exist. The weather was VMC as forecast and briefed _____.

c. Materiel Factors. Materiel failure was determined to be a cause factor in this accident. When tail rotor thrust was lost in flight due to failure of the intermediate gearbox input bevel gear (P/N 70357-06314-101), the flight crew was forced to attempt an autorotative landing. The input bevel gear failed due to a manufacturer's machining defect which served as a point of stress concentration. Three gear teeth departed the bevel gear and the intermediate gearbox failed.

d. Human Factors. Human error was determined to be a cause factor in this accident. While making an autorotative emergency landing approach in response to the antitorque failure following an intermediate gearbox failure, the PC failed to follow procedures prescribed in TM 55-1520-237-10. That is, he did not _____. As a result _____. He may have prevented the accident had he _____. The PC erred because of inadequate scan. That is because of his excitement of handling the emergency, he channelized his attention on reaching an open area and was unaware the airspeed was decreasing to a critical point.

Figure 3-4. Sample of a completed DA Form 2397–3–R, Part IV—Narrative

Legend for Figure 3-4;
Completion instructions for DA Form 2397–3–R

1. Block 1. Narrative account of investigation. The board will report, in narrative form, the facts, conditions, and circumstances as established during the investigation and present this information in four sections (history of flight, human factors, materiel factors and analysis). The first three sections will contain factual data. The analysis section is reserved for the board's documentation of its conclusions/opinions concerning the accident cause relationships. Chapter 2, paragraph 2–8, explains procedures for development of formal written analysis. Additional subheadings may be added as deemed necessary. It is important that the narrative address all of the chronological events and evidence that had a bearing on the cause of the accident and/or have the potential for adversely affecting safety of future operations. For accidents in which the investigation board determines that human error, materiel failure/malfunction or environmental conditions were a factor, that portion of the narrative will be completed in its entirety, as specified in the instructions below. The history of flight, personnel background, personnel management, meteorological, airworthiness, laboratory analysis, and analysis portions will be completed for all accidents. For the remaining subheadings which the investigation board determines were not a factor, enter after the subheading "Investigation revealed not a factor" and proceed to the next

subheading. Opinions concerning the accident cause relationship of evidence cited throughout the narrative will be discussed only in the analysis section. Use letter–size paper for continuation sheets as required.

a. *History of the flight.*

(1) *The preflight phase.* Report type of mission involved, its purpose, how the unit became tasked with the mission and who or what activity authorized it. Identify the crewmembers selected for the mission by duty assigned and crewmember station, and indicate when and how they were informed of the mission. Describe the actions of the crewmembers in preparing for the mission to include preflight planning, weight and balance determinations, briefings, filing flight plan, inspecting aircraft, etc. Describe facts which may indicate whether or not a sense of urgency was associated with the mission and if there were any delays prior to flight departure.

(2) *The flight phase.* Indicate when the aircraft departed on the mission. If the mission involved more than one routine flight segment and there were interim ground stops before the accident occurred, concisely summarize these events until addressing the flight segment involving the accident. If the flight segment involving the accident contained an in–flight emergency, give a detailed description of the onset of the emergency to include where and when it occurred, symptoms, warnings, instrument readings, etc. Also, describe actions/reactions of aircraft and crewmembers between the time of the emergency and when the aircraft came to final rest at the conclusion of flight.

(3) *The postflight phase.* Briefly describe condition of aircraft, to include whether or not engine(s) was still operating, and condition of occupants immediately after the accident. Reserve details of injuries, impact conditions, kinematics, and crash forces for the crashworthiness part of the narrative. Reserve details of damage to various aircraft components for the materiel factors part of the narrative. If a postcrash fire occurred, so indicate and explain how and when it was extinguished, if applicable. Briefly summarize egress of occupants from aircraft, survival, and rescue; reserve details for the part of the narrative devoted to egress, survival, and rescue.

b. *Human factors.* For accidents resulting from causes other than human factors, the human factors part of the narrative may be sharply reduced to negative comments for the subheadings except for subheadings addressing personnel background information, personnel management, and meteorological conditions.

(1) *Personnel background information.* This part of the narrative is extremely important in terms of providing a complete and informative profile of the principal persons involved. It should be a joint effort of reporting on the part of the IP/SP and flight surgeon members of the board. The sources of information will include, but are not limited to, personnel, flight, and training records, friends, peers, subordinates, superiors, and the persons themselves. Background information should primarily address the experience and qualifications of the individual upon arrival at the unit to which assigned at the time of the accident. For each rated crewmember who had a contributing role in the accident, briefly summarize service background to include date of service entry, initial flight training, type of assignments, and aviation qualifications acquired prior to joining current unit. Report aviator crewmembers' background to include evidence of flight safety violations, flight evaluation boards, and history of prior aviation accident involvement. If the latter applies, explain role in prior accident. Describe experience in mission aircraft relative to how initially qualified, total flight time to date, and amount of flight time in past 3 months. The same scope of information is usually not necessary for non–rated crewmembers and/or passengers. If it is suspected or known that a non–rated crewmember or passenger was at the controls, or was functioning as an aerial observer, or in another possible cause–related role, summarize background and qualifications. This part of the narrative should also address the background and qualifications of personnel not aboard the aircraft if they played a part in causing the accident. It can involve commanders, operations personnel, ATC and weather personnel, maintenance personnel, and others if applicable.

(2) *Personnel management.*

(a) Personnel management should primarily address how the individual was managed by the unit to which assigned at the time of the accident. Review how the unit has managed each individual involved. Begin with the date of assignment to current unit and report how the individual was tasked, trained, and otherwise managed up to the date of accident. Describe aviation qualifications and readiness to perform the mission. Indicate whether or not each aviator was qualified and current in the mission, type, design, and series (MTDS) aircraft assigned to the mission. Explain irregularities in the individual's training folder.

(b) Discuss additional duties and the percentage of time given them versus their primary duty. Report qualifications acquired since assignment to unit such as checkouts in additional aircraft, appointments as IP, SP, IE, PC, UT, etc. Review the procedures involved in selecting the crew for the mission. Describe timeliness of notification, compatability of crew with mission, and the relative flight experience of the pilots if more than one was assigned to the mission. Describe aviator crewmembers in terms of their professional reputations in unit, opinions of peers, subordinates, and others who have flown with them, and so forth. Describe crewmembers' sleep and dietary habits and use of alcohol and nicotine. Review unit crew rest policy. Report whether or not a crew rest policy was in effect, being monitored and complied with. If postaccident flight evaluations were administered, summarize results. Highlight weaknesses in proficiency if appropriate, especially the performance of tasks duplicating those involved in the accident.

(c) Report whether or not aviator crewmembers were physically qualified to perform mission. Discuss currency of flight physical. Explain waivers and other irregularities in medical history that may be relevant. Review results of the post accident blood and urine specimen analyses and describe irregularities. If none, so state. If an aviator crewmember was receiving medication before the accident, report type, source, dosage, side effects, and possible effect on performance. Summarize the findings of the post accident medical examination. If an aviator crewmember sustained injuries, give a brief description of the injuries and how they occurred. If an aviator crewmember sustained fatal injuries, briefly summarize autopsy report to include cause of death.

(3) *Aircraft suitability.* Describe suitability of the accident aircraft to perform the mission. Consider flight and navigation instrumentation in light of prevailing weather conditions, fuel consumption in relation to range, power available in relation to planned gross weight and density altitude, aircraft design limitations as found in applicable operators manual, configurations, etc.

(4) *Communications/air traffic services.* Describe evidence relating to communications equipment (adequacy of visual and electronic signals, etc.) and the communication that occurred or failed to occur among the crew, between crew and passengers, and between crew and outside services; e.g., ATC, operations, FSS, command and control, pathfinders, etc. Consider language difficulties, clarity of spoken words, adequacy and precision of instruction, etc. Summarize tape recordings of communications between crewmembers and ground stations, if applicable.

(5) *Navigation aids.* Describe adequacy of navigation aids (VOR, NDB, ILS, etc.) Consider FAA or other agency publications, NOTAMs, pilot reports, etc.

(6) *Meteorological information.* Describe weather conditions that prevailed throughout the mission and conditions that existed at the accident site at the time of the accident. Include sky condition, visibility, winds, icing, turbulence, and any significant weather conditions. Consider weather observations made by trained weather observers and/or witnesses in the area. If weather was considered a contributory factor to the accident, describe the accuracy of the weather forecast received by the aircrew. If the actual weather differed significantly from the forecast, include a discussion of the information that was available to the forecaster.

(7) *Ground support services.* Describe evidence that relates to the role of ground support services in the accident. Consider POL personnel, ground guides, fire guards, etc.

(8) *Crash survival.* Report results of crash survival investigation. Discuss crashworthiness of the aircraft in terms of crash sequence, impact conditions, kinematics, and crash impact forces. Include the performance of the restraint systems and the adequacy of the aircraft

structure to maintain occupiable space and attenuate crash forces. Explain occupant injury relationship to crashworthiness. Explain if injuries occurred during or after the crash sequence. Also include the performance of personal protective clothing and equipment; e.g., helmet, visor, clothing, survival vest components, etc.

(9) *Emergency egress (including ejection or bailout), survival, and rescue.* Discuss details of egress, survival, and rescue investigations. Describe where individuals were located in aircraft, how and where they exited aircraft, difficulties encountered, and position of aircraft at time of egress. Describe factors that may have enhanced or inhibited the success of the survival/rescue situation. Report when and how rescue personnel were notified and how long it took rescue personnel to respond to the initial notification, arrive at accident site, and evacuate the survivors. Explain problems associated with delays in rescue.

(10) *Special investigation.* Report results of any special investigations that were conducted because of the accident. If, for example, during the investigation, it is found that helmet mounted display or night vision systems were a factor in the accident, the applicable agency/program manager should be notified and a determination made as to their involvement.

(11) *Witness investigation.* Briefly indicate number of witnesses interviewed and identify duty position. Summarize pertinent witness observations and indicate whether or not witnesses generally agreed concerning accident events. Describe major conflicts in the provided information. Resolution of inconsistencies in the information should be discussed in the analysis portion of the report. Opinions regarding witness credibility should also be reserved for the analysis section.

c. *Materiel factors.* Report results of materiel factors investigation in the appropriate subparagraphs. Those accidents that do not involve materiel failure/malfunctions may be abbreviated to include negative reports, if applicable, for all subheadings except aircraft airworthiness and laboratory analysis. Identify and discuss damage resulting from pre–crash materiel failure/malfunctions and omit damage that resulted from crash forces exceeding design limits. References can be made to the wreckage distribution diagram, photographs, reports, records, etc. Include the following areas:

(1) *Aircraft airworthiness.* Describe the airworthiness of the aircraft. Investigation should include, but not be limited to, maintenance records, historical records, interviews with maintenance personnel, weight and balance records, conduct of preflight, etc. Identify all deficiencies/discrepancies that had a role in the accident. Discuss those technical publications not complied with or inadequate in any manner.

(2) *Flight recorders.* Report information obtained from flight data recorders, if applicable. The board's analysis of this data, however, should be included in the analysis portion of the report.

(3) *Airframe.* Use subparagraphs to report evidence obtained in the examination of the airframe structure and landing gear components.

(4) *Systems.* Use subparagraphs to report evidence obtained in the examination of fuel, warning, flight control, hydraulic, electrical, stability augmentation/autopilot, and other aircraft systems. Note all discrepancies and their effects on the operation of the aircraft.

(5) *Powerplant.* Report the evidence obtained during examination of the engine(s). Include indications of power at impact. List all discrepancies noted and their effect on engine operation.

(6) *Rotor systems or propellers.* Report the evidence obtained during the examination of rotor systems or propellers. Describe any faults noted and their condition as a result of strikes/impact.

(7) *Transmissions/gearboxes and drive train.* Report condition and describe any faults noted and cause, if known.

(8) *Laboratory analysis.* Report the results of aircraft fluids, components, and parts submitted for laboratory analysis.

(9) *Crash site information.* Describe adequacy of the crash site/airfield (heliport, helipad, PZ, LZ, etc.) to include dimensions, lighting and marking, obstructions, type and condition of surface, slopes, etc.

(10) *Fire.* Discuss the role of fire to include when it occurred, manner in which the fire was detected, ignition source, combustible material, location, propagation, and degree of success in extinguishing.

d. *Analysis.*

(1) The analysis paragraph should summarize the first three paragraphs of the narrative to include the opinions and conclusions of the board and must conclusively show the cause and effect relationship of the evidence gathered during the accident investigation. The analysis should also discuss those potential factors considered but not supported or determined not to be factors by investigation board. The analysis discusses the influence of command activity or lack thereof in the occurrence or potential prevention of accidents. Subparagraph headings in the analysis may coincide with pertinent subparagraphs in the first three sections of the narrative, with the exception of command influence, which is reserved for the analysis paragraph only. As a minimum, the analysis part of the narrative will provide the following information:

(a) Identify the Human errors, materiel failures, or environmental factors involved in the accident in the context of the accident sequence of events. The explanations, examples, and key words are contained in appendix B.

(b) Discuss the results/effects of the errors/materiel failures/environmental factors.

(c) Identify the system inadequacy(ies) that caused or permitted the errors/materiel failures/environmental factors or injuries to occur. The definitions, examples, and key words are contained in appendix B.

(d) Report preventable injuries in the context of crash survivability/egress/rescue, and explain how they occurred.

(e) Discuss the command influence in the accident sequence of events, or the prevention of potential accidents.

(2) To fulfill these information requirements, the board should review all the evidence relating to the accident disclosed during the human, environment and materiel factors investigations. This may require readdressing specific paragraphs contained in the narrative and indicating the relationships between the facts disclosed and the errors/failures/environmental factors that occurred. From this review, the board should consider a logical development of the various circumstances and events that may have existed. This process of deductive reasoning should lead to the formulation of an explanation (or explanations) concerning what caused the accident and preventable injuries, if they occurred, and why they happened. The explanation(s) should be discussed and tested against the evidence gathered during the investigation. If it is necessary to develop hypotheses, it is important for the board to state why a particular hypothesis was or was not supported by the evidence.

(3) To initially outline and structure the correlation of cause–related errors/materiel failures/environmental factors and associated system inadequacy(ies), the board will find it useful to review the definitions and examples of mistakes/errors, system inadequacy(ies), and remedial measures at appendix B, before composing the narrative part of the analysis. When the outline has been completed, the narrative rationale and conclusions should be composed using the following examples as a guide:

(a) Begin the paragraph by specifying the scope and conclusions of the investigation. In all cases, begin the paragraph with these words: "After analyzing the human, materiel, and environmental data collected during the investigation, the board concluded the accident was caused by . . . " Complete the sentence by specifying the factor(s) (human, materiel, or environment) which caused the accident, e.g., ". . . human error–leader failure."

(b) Describe when or where the error/failure/injury/environmental factor occurred in the context of the accident chronology of events; e.g., "before the mission," "during takeoff," "during an NOE deceleration," "while installing a hydraulic line," "during the in–flight ejection, ""during the crash sequence," etc.

(c) Identify the duty position of the person who erred, became injured, or the name and part number or the national stock number (NSN) of the part, component or system that failed; e.g., "the pilot"; "the mechanic"; "the fuel control, NSN 2915–00–157–2313"; "the input bevel gear, part number 2040405009;" etc.

(d) Identify the error in the context of a listed mistake/error category; e.g., "incorrectly diagnosed the emergency at hand," "failed to assign responsibilities," "failed to detect," etc. If a materiel failure is being reported, explain the type of failure; e.g., "overheated," "vibrated, ""frayed," "decayed," etc. If an injury is being reported, explain if the individual "struck" or "was struck by" the injury–causing agent. See appendix B for explanations.

(e) Cite the directive or standard the mistake/error category failed to comply with; e.g., “contrary to standard and description for task 5007, TC 1–135;” etc. In the absence of written guidance/standards for a mistake/error, evaluate the task in terms of how other equally qualified and prudent personnel would perform the same task under similar circumstances. If the error represents performance that is unacceptable, it is contrary to common practice.

(f) Describe the specifics of the error; e.g., “he failed to initially increase collective to maintain the altitude of the tail rotor;” “he excessively torqued the nut, PN 12345;” etc.

(g) Describe the consequences of the error, materiel failure, environmental factor, or the resulting injury; e.g., “as a result, when he applied aft cyclic to slow to a full stop, the tail rotor struck the ground, damaging the tail rotor blades and causing a loss of antitorque control;”“as a result, the aircraft landed hard;” “as a result, the pilot sustained a compression fracture of the T12–L1 vertebrae;” etc.

(h) A complete error statement could read as follows: “During an NOE deceleration, the pilot improperly responded to the emergency as described for standard 2, task No. 5007, TC 1–135. That is, he failed to initially increase collective to maintain sufficient altitude for tail rotor clearance of the terrain. As a result, when he applied aft cyclic to slow to a full stop, the tail rotor struck the ground damaging the tail rotor blades and causing a loss of effective antitorque control.”

(i) A complete materiel failure statement could read as follows: “During cruise flight, a section of the input bevel gear, PN 2040405009, eroded through. As a result, the continuity of the tail rotor drive system was interrupted, causing a loss of effective antitorque control.”

(4) Each statement of error, materiel failure, environmental factor or injury will be followed by statements identifying the system inadequacy(ies) that caused or permitted the error/failure/injury to occur or an environmental factor to become a cause. The system inadequacy(ies) statements are the most important part of the analysis. This is because the system inadequacy(ies) causing or permitting an error, failure, or injury to occur or an environmental factor to become a cause are more important from a remedial standpoint than the error, failure, injury, or environmental factor itself. Each system inadequacy(ies) statement will contain the following information:

(a) A transition phrase to tie the system inadequacy(ies) to the error/failure/injury; i.e., “the pilot improperly responded to the emergency because,” “the bevel gear eroded to a point of failure because,” “the pilot sustained the back injury because,” etc.

(b) Identification of the system inadequacy(ies) category(ies); e.g., “because of inadequate motivation/mood (attitude),” “inadequate supervision by the unit operations officer,” “because of inadequate quality control on the part of the manufacturer,”“because of inadequate seat design,” etc.

(c) An explanation of how or why each system inadequacy(ies) caused or permitted the error/failure/injury/environmental factor: e.g., “During the pilot’s last standardization flight evaluation, the IP told the pilot he did not perform the NOE deceleration properly and needed additional dual instruction. Regardless, the pilot chose to practice the maneuver by himself before he was given additional training. The IP contributed to the error because he graded substandard performance of the maneuver satisfactory during the standardization flight evaluation and he did not follow up the additional training. The unit operations officer contributed to the error because, after the IP recommended the additional training, he scheduled the pilot for a tactical training mission before ensuring the pilot had received the additional training;” “the manufacturer’s quality control procedures failed to detect a machining defect on the surface of the gear that became the source of progressive fatigue mechanisms;” etc.

(5) Once the preceding elements of information are reported for each error, failure, injury, or environmental factor in the manner stated, the resulting conclusions (findings) can stand on their own. The example of human error used in these instructions ties three system inadequacy(ies) to the error. There would be more or less system inadequacy(ies) depending upon the circumstances. The point to be made is that system inadequacy(ies) causing or permitting an error, failure, or environmental cause must be made visible before effective corrective actions can be recommended.

(6) The analysis part of the narrative does not have to be limited to explaining and concluding what caused or contributed to the accident or injuries. The analysis may also address present but noncontributing hazards if they could adversely affect the safety of aviation operations. There are provisions for reporting non–cause–related hazards. They are contained in the instructions for completing the DA Forms 2397–2–R.

2. Block 2. Enter the case number shown on the DA Form 2397–1–R.

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT
PART V - SUMMARY OF WITNESS INTERVIEW
For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENT CONTROL SYMBOL CSOCS-309

1. NAME OF WITNESS (Last, First, MI)	2. OCCUPATION/TITLE	3. GRADE	4. SSN	5. AGE
HELPER, RONALD A.	Army Aviator/ Pilot	W2	123-45-6789	24

6. ADDRESS (Include ZIP Code) (If military, include organization)
Co C, 2-14 Avn Regt
Fort Sand, CA 94111

7. TELEPHONE NUMBER
DSN 666-2222

8. DATE OF INTERVIEW
2 October 1993

9. EXPERIENCE AND BACKGROUND
Aviator
2 yrs, 900 hrs R/W flt time

10. LOCATION AT TIME OF ACDT
Left seat of acdt acft

11. INTERVIEWER
MAJ Leader

12. Was a promise of confidentiality offered to the witness? [X] YES [ ] NO *(If yes, read blk 15a to the witness and complete blk 15. If no, read blk 15b to the witness.)* Confidentiality was requested by the witness. [X] YES [ ] NO *(If Yes, interviewer sign and date statement below.)*

THE WITNESS MADE THIS STATEMENT UNDER A PROMISE OF CONFIDENTIALITY.

John D. Leader — SIGNATURE OF INTERVIEWER
2 Oct 93 — DATE

13. SUMMARY OF INTERVIEW

CW3 Helper's statement is summarized as follows:

CW2 Helper and the PC preflighted the UH-60A, 9212345, at 0730. They found no discrepancies and departed as scheduled at 0900. At approximately 0958, while in cruise flight at 1500 feet MSL and 120 knots, CW2 Helper heard a loud bang from the aft portion of the aircraft, followed by a loud grinding noise and an increase in vibration throughout the airframe. Simultaneously, the aircraft yawed about 30° to the right. The PC told CW2 Helper that he had lost antitorque control and was going to autorotate to a cleared area to the front of the aircraft. The PC requested CW2 Helper to reduce the power control levers to "OFF" and send a Mayday call to Sand tower on a guard radio frequency. CW2 Helper complied and was acknowledged by Sand tower.

The aircraft made an autorotative descent toward the cleared area, with airspeed at approximately 90 knots. As the aircraft neared 200 feet AGL, the airspeed decreased to less than 80 knots, and the rate of descent increased. CW2 Helper noticed that the PC was concentrating his attention on the cleared area, so he told the PC the airspeed was getting too low. The PC did not acknowledge, and about 2 seconds later, at a location about 40 meters short of the cleared area, the aircraft began a near vertical descent.

The aircraft descended into the treetops with little forward airspeed and descended vertically into the trees. It continued its vertical descent to the ground and came to rest on its left side. CW2 Helper's door was blocked by the aircraft attitude, and he exited unassisted through the right cargo door along with the crewchief. The PC was extracted from the aircraft by CW2 Helper and the crewchief. CW2 Helper stated that the PC was unconscious. The PC exhibited no pulse or respiration and was bleeding from his nose and mouth. A grass fire had started in the vicinity of the hot exhaust pipe and was extinguished with the aircraft portable fire extinguisher.

End of summary.

14. CASE NO.	a. Date (YYMMDD)	b. Time	c. Acft Serial No.
	931001	1000	9212345

DA FORM 2397-4-R, JUL 94

Figure 3-5. Sample of a completed DA Form 2397–4–R, Part V—Summary of Witness Interview

15. GENERAL WITNESS INFORMATION BRIEFING *(Interviewer must read appropiate instructions to the witness)*

a. Promise of confidentiality offered.

(1) This accident investigation board has been convened under the provisions of AR 385-40 for the purpose of conducting a safety investigation.

(2) This may be just one of a number of investigations being conducted regarding this accident; collateral or legal investigations may be ongoing as well. Those investigations are entirely separate from a safety investigation and are also required to inform you of their purpose and of your legal rights.

(3) This safety investigation is being conducted for accident prevention purposes only. Within the military, pursuant to Army Regulation 385-40, it cannot be used for any other purpose, to include any future disciplinary actions against any individuals. Therefore, the interview you are being asked to provide will be used by the Army in the interest of safety and accident prevention only.

(4) Nonconfidential witness interviews may be released to the public pursuant to a Freedom of Information Act request. If you wish to protect your interview from public release outside the military, then your interview must be pursuant to a promise of confidentiality. Confidentiality means that your interview will not be released to the public or outside DOD safety channels.

(5) Whether your interview is confidential or not, the chain of command will review the final accident report, which may include a summary of your interview, but the chain of command may only use the investigation report and the interviews for safety and accident prevention purposes.

(6) If you ever have knowledge that your witness interview was used by the Army for anything other than accident prevention purposes (for example, disciplinary action against an individual), you should consult with your local Judge Advocate Defense Counsel Office and request that the Command Judge Advocate, U.S. Army Safety Center, be notified at DSN 558-3960 or commercial (205) 255-3960.

(7) The promise of confidentiality is available to you if you desire it. Do you desire it?

b. No promise of confidentiality offered.

(1) This accident investigation board has been convened under the provisions of AR 385-40 for the purpose of conducting a safety investigation.

(2) This may be just one of a number of investigations being conducted regarding this accident; collateral or legal investigations may be ongoing as well. Those investigations are entirely separate from a safety investigation and are also required to inform you of their purpose and of your legal rights.

(3) This safety investigation is being conducted for accident prevention purposes only. Within the military, pursuant to Army Regulation 385-40, it cannot be used for any other purpose, to include any future disciplinary actions against any individuals. Therefore, the interview you are being asked to provide will be used by the Army in the interest of safety and accident prevention only.

(4) The chain of command will review the final accident report, which may include a summary of your interview, but the chain of command may only use the investigation report and the interviews for safety and accident prevention purposes. The interview summary may be released to the public pursuant to a Freedom of Information Act request.

(5) If you ever have knowledge that your witness interview was used by the Army for anything other than accident prevention purposes (for example, disciplinary action against an individual), you should consult with your local Judge Advocate Defense Counsel Office and request that the Command Judge Advocate, U.S. Army Safety Center, be notified at DSN 558-3960 or commercial (205) 255-3960.

16. AVAILABILITY OF PROMISE OF CONFIDENTIALITY FOR "LIMITED USE" REPORT OF INVESTIGATION

a. Pursuant to AR 385-40, witness interviews may only be used within the military for purposes of accident prevention, and may not be used as evidence in connection with any administrative or disciplinary proceeding. This protection alone does not prevent release of the interview outside of the military (to the public, newsparers, attorneys, etc.) under the Freedom of Information Act. If you wish to protect your interview from release outside of the military, then your interview must be pursuant to a promise of confidentiality.

b. If you do not wish a promise of confidentiality, you may decline such below. In that case, your interview will still be used in the military only for purposes of accident prevention, but it may be released outside of the military in response to a Freedom of Information Act request. Please indicate which option you desire by initialing one of the choices below:

RAH I request a promise of confidentiality. I understand that the results of my interview will be used within the military only for the purposes of accident prevention, and will also be protected from public release outside of the military under the Freedom of Information Act.

_____ I decline a promise of confidentiality. I understand that the results of my interview will be used within the military only for purposes of accident prevention. I also understand that the results may be publicly released outside of the military under the Freedom of Information Act.

Ronald A. Helper
Name of witness *(Print)*

REVERSE OF DA FORM-2397-4 -R, JUL 94

Page 2

Figure 3-5. Sample of a completed DA Form 2397–4–R, Part V—Summary of Witness Interview—Continued

Legend for Figure 3-5;
Completion instructions for DA Form 2397–4–R

1. Block 1. Self–explanatory.

2. Block 2. Enter general occupation of the witness and duty being performed at time of the accident, if applicable. Use duties listed at Table 3–5.

3. Block 3. Enter the grade of witness. Use one of the codes at Table 3–8.

4. Blocks 4, 5, and 6. Self–explanatory.

5. Block 7. List defense satellite network (DSN) number if applicable.

6. Block 8. Enter date(s) statement(s) was/were made.

7. Block 9. Summarize aviation experience and background; e.g., "Army aviator 10 years. Total flight hours 3,500 (RW 3,000; FW 500)." Indicate FAA ratings and approximate flight hours for nonmilitary pilot witnesses. Indicate MOS and approximate total flight hours for non–aviator crewmembers drawing flight incentive pay.

8. Block 10. Enter location of witness at the time of the accident relative to flight path/impact of aircraft.

9. Block 11. Enter rank/grade and last name of person in charge of interview. If witness is interviewed by different persons in charge on separate occasions, list all interviewers in charge and prefix each name with "1st," "2d," "3d," etc., to designate which interview session the interviewer conducted.

10. Block 12. Check the appropriate box to indicate if the individual "Was/Was Not" offered a promise of confidentiality. Also, check the appropriate box to indicate whether or not the witness requested a promise of confidentiality. If "Yes" was checked, the interviewer will sign and date the confidentiality statement.

11. Block 13. Complete the summary of interview block as follows:

a. *Multiple interviews, same witness.* Prefix the summary of each interview with the date and indicate if the statement is the 1st, 2d, 3d, etc.

b. *Comprehensiveness.* As a general rule, the interview summaries of persons occupying crew stations aboard the aircraft during the accident should be summarized in greater detail than the statements of others. This is because the crewmembers are the best source of information pertaining to the accident chronology of events. The chronology for the "history of flight," DA Form 2397–3–R, will most often be obtained from the crew and should be used as a guide in determining what elements of information to include in the interview summaries. If crew error appears to be involved in the accident, the mistake/errors and system inadequacy(ies) listed in the instructions for completing the DA Form 2397–2–R are useful for determining what should be addressed in the crewmember witness summaries.

c. *Consolidating.* When several witnesses, other than crewmembers, provide essentially the same observations, it is not necessary to prepare a separate DA Form 2397–4–R for each witness except for statements made with a promise of confidentiality. In cases where the summarized statements of several witnesses can be consolidated, it is appropriate to leave blocks 1 through 9 blank. In block 13, list the names of the witnesses and then summarize their collective observations.

d. *Format.* The proper format is a concise summary of information elements. An example is as follows: "This witness was occupying a passenger seat (identify location in passenger compartment) in the aircraft at the time of the accident. His account of the accident essentially agreed with the "history of flight" portion of DA Form 2397–3–R. Additionally, he heard a grinding noise in the area of the aircraft's transmission and felts a high frequency vibration where his boots contacted the floor of the airframe in the passenger's compartment." In cases where such is essential, limited direct quotes of a witness (together with the specific questions they are in response to) may be used. This, again, should be done sparingly and only when necessary. It is important that the statement be the investigator's summarization and not an exact verbatim transcript of what the witness said. The summary should be written in the third person ("the witness said,""he said,") and not the first person ("I saw," "I heard").

12. Block 14. Enter the case number shown on DA Form 2397–1–R.

13. Block 15. Interviewer will read block 15a or 15b to each witness, depending upon the category and/or circumstances of the witness.

14. Block 16. Those witnesses which were offered a promise of confidentiality, must indicate acceptance or refusal by initialing the appropriate statement.

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT
PART VI - WRECKAGE DISTRIBUTION
For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-309

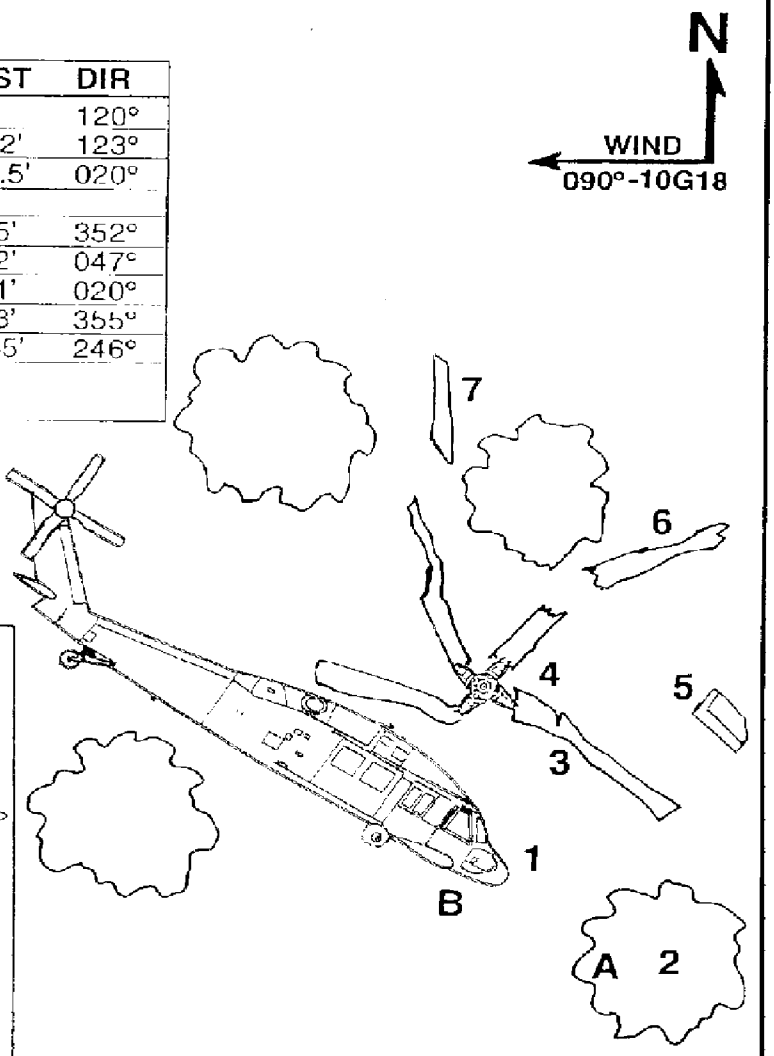
1. GRID: SHOW MAJOR GOUGE MARKS, DISTRIBUTION OF WRECKAGE, OBSTACLES, DIRECTION OF NORTH, WIND DIRECTION, WIND VELOCITY, POSITION OF WITNESS, ETC.

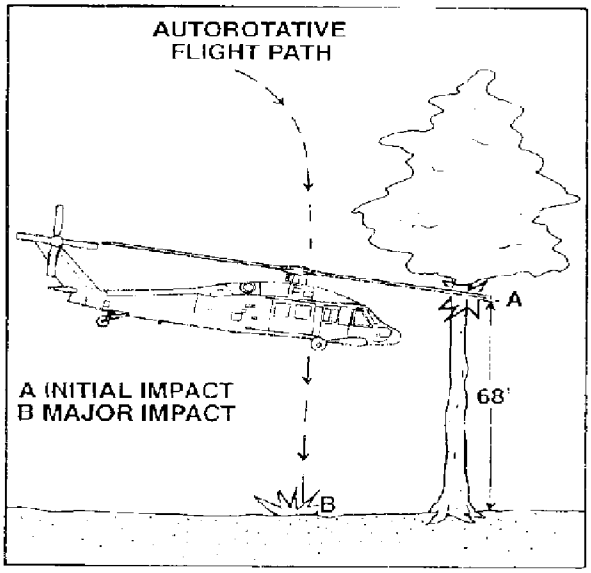
Suggested Scale: 1" Equals 50' Actual Scale: 1" Equals NOT TO SCALE

LEGEND

#	NAME	DIST	DIR
1.	MAIN FUSELAGE		120°
2.	TREE 70 FT TALL	22'	123°
3.	GROUND SCAR M/R BLADE L-5', W-18", D-7"	20.5'	020°
4.	M/R BLADE AND HUB	35'	352°
5.	RIGHT COCKPIT DOOR	42'	047°
6.	M/R BLADE PART 10' LONG	61'	020°
7.	M/R BLADE PART 12' LONG	83'	355°
8	WITNESS	145'	246°

A-INITIAL IMPACT
B-MAJOR IMPACT





8

2. CASE NO.	a. DATE (YYMMDD)	b. Time	c. Acft Serial No.	3. OTHER AIRCRAFT SERIAL NO.
	931001	1000	9212345	

DA FORM 2397-5-R, JUL 94

Figure 3-6. Sample of a completed DA Form 2397–5–R, Part VI—Wreckage Distribution

Legend for Figure 3-6;
Completion instructions for DA Form 2397–5–R

General. Orient the flight path (at instant of initial impact) along the horizontal or vertical axis of the grid and show the direction of true north, oriented to the top of the page, with an arrow. This procedure eases the task of locating the aircraft component(s) laterally and longitudinally along the crash path. A suggested scale of 40 feet per inch is shown. Actual scale used is to be entered. Show wind direction with an arrow pointed in the direction of the windflow. Identify wind direction in degrees and velocity in knots.

1. Block 1. Use grid to show the following information:

a. Location of all aircraft major and significant components.

b. Obstacles struck by aircraft in crash sequence; i.e., structure, trees, power lines, etc.

c. Terrain marks made by aircraft in crash sequence; i.e., earth gouge length, width, and depth, snow or earth pushed in front of aircraft, etc.

d. A profile view of the wreckage distribution, especially if the impact occurs on sloped terrain or on obstacles in the flight path.

e. If necessary, use more than one form to show the profile view of the crash sequence, especially if the initial impact occurs on a tall tree or power line where a large vertical axis is needed.

f. For midair collisions, construct a composite diagram (wreckage distribution of both aircraft superimposed on the same plot).

g. For a widely scattered wreckage distribution, use a larger grid sheet if needed, and attach to this form.

h. If the aircraft rolls over or noses over one or more times along the crash path, so indicate by use of curved arrows.

i. Identify initial, major, and secondary impact points, as applicable.

j. Show location of key witnesses.

k. Show location of personnel thrown or ejected from the aircraft.

Note: A polar diagram is another acceptable method of diagramming rotary–wing or fixed–wing accident sites. The top of the diagram can represent north. A readily identifiable portion of the wreckage e.g., fuselage, nose, wing, etc. can serve as a point of origin or pole for the diagram. Choose a scale that will allow plotting of the whole accident scene. Determine the compass heading of the aircraft at its final resting place and position a semblance of the aircraft on the diagram so debris can be plotted from that point. Determine the compass heading and distance of pieces of wreckage from the main body of the wreckage. Number the location of each piece of wreckage at the position it was found relative to the main wreckage. Define the numbers with a legend that identifies each piece of wreckage and shows its direction and distance from the main wreckage.

2. Block 2. Enter the case number as shown on the DA Form 2397–1–R, block 25.

3. Block 3. Use only for aircraft other than “case aircraft” in accidents involving more than one aircraft. Enter serial number of other aircraft to which the form applies.

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT
PART VII - IN-FLIGHT OR TERRAIN IMPACT AND CRASH DAMAGE DATA
For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL CSOCS-309

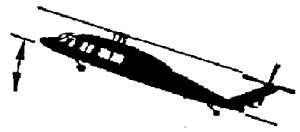
1. IN-FLIGHT COLLISION KINEMATICS AT INSTANT OF IMPACT

a. Airspeed At Impact *(knots)*: 5

b. Vertical Speed *(feet per minute)*: 700 ☐ Up ☒ Down

c. Flight Path Angle *(degrees)*: 85 ☐ Up ☒ Down

d. In-Flight Attitude At Impact

(1) Pitch Angle 

Degrees 5 ☐ Up ☒ Down

(2) Roll Angle 

Degrees 0 ☐ Left ☐ Right

f. Obstacle Strike Sequence *(Enter 1, 2, 3, etc. to show sequence of strike)*

1 Prop/Rotor	____ Landing Gear
____ Rotor Mast	____ Wing
____ Tail Rotor	____ Empennage
____ Tail Boom	____ WSPS
____ Windscreen	____ FLIR
____ LWR Nose/Gun Turret	____ Other *(Specify)*

g. Obstacle Conspicuity *(Within accident distance from pilot's position, the obstacle in its surroundings was obscured)*: (1) ☒ Completely (2) ☐ Partially (3) ☐ Not Obscured

h. Wire or Cable Description

Type	Dia In Inches	No. Struck
(1) Power Transmission		
(2) Telephone or TV		
(3) Bracing *(guy/support)*		
(4) Other *(Specify)*		

i. WSPS (1) Installed ☒ Yes ☐ No (2) Cut Wire ☐ Yes ☐ No

j. Obstacle Struck Other Than Wire *(diameter in inches)*: 12"

e. Obstacle Identity And Collision Height

Obstacle	Collision Height Above Ground *(feet)*
(1) ☐ Birds	
(2) ☐ Aircraft	
(3) ☐ Wires/Cables	
(4) ☐ Vehicles	
(5) ☒ Tree	68
(6) ☐ Other	

2. TERRAIN COLLISION KINEMATICS AT INSTANT OF MAJOR IMPACT

a. Ground Speed at Impact: 0 *(knots)*

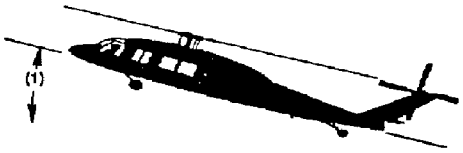
b. Vertical Speed ☐ Up ☒ Down: 1200 *(FPM)*

c. Flight Path Angle ☐ Up ☒ Down: 90 *(degrees)*

d. Indicate by Check Marks Which Two of The Three Preceding Parameters *(a, b, c)* Are The Most Accurate: a. ☐ b. ☒ c. ☒

e. Impact Angle: 90 *(degrees)*

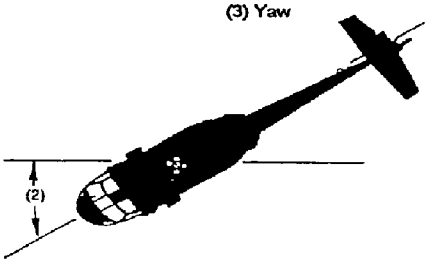
f. Altitude at Major Impact

(1) Pitch 

Degrees 10 ☒ Up ☐ Down

2) Roll 

Degrees 5 ☒ Left ☐ Right

(3) Yaw 

Degrees 0 ☐ Left ☐ Right

3. ROTATION AFTER MAJOR IMPACT

a. Did Aircraft Rotate About Any Axis After The Above Major Impact *(If yes, complete items b, c, and d)*: ☒ Yes ☐ No ☐ Unknown

b. Roll Degrees	c. Yaw Degrees	d. Pitch Degrees
☒ Left ☐ Right Degrees 85	☐ Left ☐ Right Degrees 0	☐ Up ☐ Down Degrees 0

4. IMPACT FORCES RELATIVE TO AIRCRAFT AXES *(G's)*

a. Vertical *(G's)*	b. Longitudinal *(G's)*	c. Lateral *(G's)*
☐ Up ☒ Down G's 15	☐ Fore ☐ Aft G's 0	☒ Left ☐ Right G's 2

5. CASE NO.	a. Date *(YYMMDD)*	b. Time	c. Acft Serial No.	6. OTHER ACFT SERIAL NO.
	931001	1000	9212345	

DA FORM 2397-6-R, JUL 94

Figure 3-7. Sample of a completed DA Form 2397–6–R, Part VII—In–Flight or Terrain Impact & Crash Damage Data

7. FUSELAGE INWARD DEFORMATION OR COLLAPSE AND INJURY RELATIONSHIP *(Check appropriate boxes)*

Fuselage Area	Amount or Type of Deformation or Collapse	Specific Area of Deformation or Collaspse				Fuselage Deformation Produced/Contributed to Injury			
		Cockpit (1)	Forward Cabin Area (2)	Mid Cabin Area (3)	Rear Cabin Area (4)	Cockpit (5)	Forward Cabin Area (6)	Mid Cabin Area (7)	Rear Cabin Area (8)
a. Roof	Up to 1 Foot								
	More Than 1 Foot But Less Than 3 Feet		X	X	X				
	More Than 3 Feet Foot								
b. Left Side	Up to 1 Foot								
	More Than 1 Foot								
c. Right Side	Up to 1 Foot								
	More Than 1 Foot	X	X			X			
d. Nose	Up to 1 Foot								
	More Than 1 Foot								
e. Floor	Up to 1 Foot								
	More Than 1 Foot								
f. Floor *(local deformation under seats)*	Vertical								
	Sideward								
	Forward/Rearward								

8. LARGE COMPONENT DISPLACEMENT *(Check appropriate boxes)*

Component	Displaced (1)	Torn Free (2)	Cockpit Penetrated/Entered (3)	Cabin Penetrated/Entered (4)
a. Transmission *(forward or main)*	X			X
b. Transmission *(rear)*				
c. Rotor Blade *(forward or main)*		X	X	
d. Rotor Blade *(rear or tail)*				
e. Landing Gear *(specify location)* Left	X			
f. Other *(specify)*				

9. POSTCRASH FLAMMABLE FLUID SPILLAGE

a. Equipped With Crashworthy Fuel System: [X] Yes [ ] No

b. If So Equipped, Did Breakaway Valves Separate as Designed: [ ] Yes [ ] No [X] NA

c. Flammable Fluid Spillage Occurred: [X] Yes [ ] No

d. Auxiliary Fuel tanks Installed: [X] Yes [ ] No; [ ] Internal [X] External; Crashworthy [ ] Yes [X] No

e. Amount and Type Fluid Spilled

Gallons	Fuel *(Type)*	Oil *(Type)*	Hyd Fluid *(Type)*	Other *(Specify)*
0 - 1				
> 1 - 2				
> 2 - 10		MIL23699		
> 10 - 20				
> 20				

10. SPILLAGE SOURCE

Part	a. Part Name/Nomenclature	b. Part Number	c. National Stock No.
(1) Cell/Tank/Reservoir			
(2) Filter			
(3) Fitting			
(4) Fluid Line	Elbow, Tube	AN 833-16D	4730-00-197-2920
(5) Value			
(6) Breakaway Valve			
(7) Other *(Specify)*			
(8) Other *(Specify)*			
(9) Other *(Specify)*			

11. REMARKS11

ESSS external tanks, 2 ea. 230 gal., installed but were empty.

REVERSE OF DA FORM 2397-6-R, JUL 94

Page 2

Figure 3-7. Sample of a completed DA Form 2397–6–R, Part VII—In–Flight or Terrain Impact & Crash Damage Data&—Continued

Legend for Figure 3-7;
italic>Completion instructions for DA Form 2397–6–R

1. Block 1. This block is required for in–flight collisions, such as a midair collision, wire strike, bird strike, tree strike, etc. If doubt exists as to whether this block or block 2 should be used, both blocks can be completed. For example, the aircraft may strike a structure during an approach and continue under control some distance forward and crash; thus, in–flight and terrain collisions are involved. Near simultaneous impacts with trees, structures, etc., and the ground require only block 2 to be completed. In other cases, such as a bird strike, in which a subsequent routine landing is made, only block 1 would be checked. If the information desired in these blocks cannot be determined, so state in the box(es) provided for the information.

a. **Block 1a.** Estimate or analytically determine and enter the airspeed (knots) just before impact.

b. **Block 1b.** Estimate or analytically determine and enter the vertical speed (feet per minute) just before impact, and check whether “up” or “down.” If zero, enter“0” in space provided and do not check “up” or “down” box.

c. **Block 1c.** Enter the flight path angle (degrees) at major impact and check whether “up” or “down.”

d. **Block 1d.** Enter the pitch and roll angles (degrees) at moment of impact and check the appropriate direction.

e. **Block 1e.** Check obstacle(s) struck while aircraft was in flight. For example, contact with a hangar building would be checked as “Other.” Also enter collision height above the ground.

f. **Block 1f.** Check box to identify area of aircraft that sustained the strike. If aircraft sustained a strike at more than one location, check several boxes and indicate 1st, 2d, 3d, to show strike sequence.

g. **Block 1g.** Check the appropriate box to reflect the wire/cable(s)/obstacle conspicuousness to the pilot under the environmental conditions and terrain at the time of the accident.

h. **Block 1h.** Enter the outside diameter for the type cable/bundle struck. The outside diameter of the wire bundle/cable including insulation is desired, not the individual wire inside the bundle or cable. Enter the number of wires struck in the impact; i.e., in a five–cable power transmission line, only three cables may be struck.

i. **Block 1i.** Check whether or not a wire strike protection system (WSPS) was installed. Also check whether or not the WSPS cut the wire.

j. **Block 1j.** Enter outside diameter of tree limb, pole, bush, etc., that was struck, if applicable.

2. Block 2. Complete this block to show terrain collision kinematics at instant of major impact. If block 1 was filled out and aircraft continues under control after in–flight collision and then sustains further damage upon ground impact, complete block 2 also. If aircraft sustains in–flight damage such as from a bird strike and then makes a routine landing, block 2 does not have to be filled out.

a. **Block 2a.** Estimate or analytically determine and enter the ground/horizontal velocity (knots) at the instant of the major impact. The horizontal velocity is desired. This value is not to be confused with airspeed or resultant velocity. The ground speed vector combined with the vertical speed vector can be used to determine the resultant velocity as shown for sample high angle and low angle impacts.

b. **Block 2b.** Estimate or analytically determine and enter the vertical speed (fee per minute) just before impact and check whether“up” or “down.” The vertical speed at impact can be combined with ground speed to yield the resultant velocity as discussed above.

c. **Block 2c.** Enter the flight path angle (degrees) just before impact and check whether “up” or “down.”

d. **Block 2d.** Indicate by check marks which two of the three parameters above are the most accurate. Since any two items can determine the third, it is necessary to determine which two (a or b, b and c, or a and c) the investigator feels are most accurate. Check only two boxes.

e. **Block 2e.** Enter the impact angle (degrees).

f. **Block 2f.** Enter the pitch, roll, and yaw attitude (degrees) of aircraft at the instant of impact.

(1) *Pitch.* Enter degrees and check “up” or “down” pitch in appropriate box.

(2) *Roll.* Enter degrees and check “Left” or “Right” roll in appropriate box.

(3) *Yaw.* Enter degrees and check “Left” or “Right” yaw as appropriate. If nose is to left of flight path, check “Left” box; if nose is to right, check “Right” box.

3. Block 3.

a. **Block 3a.** Check the appropriate box.

b. **Block 3b.** Enter the roll in degrees for the appropriate direction if the aircraft rolled significantly after the major impact. A value should be entered even if the aircraft comes to rest in the original attitude after it has rotated during the crash sequence.

c. **Block 3c.** Enter the yaw in degrees for the appropriate direction if the aircraft yawed significantly after the major impact. A value should be entered even if the aircraft comes to rest in the original attitude after it has yawed during the creash sequence.

d. **Block 3d.** Enter the pitch in degrees from the horizontal (level) attitude if the aircraft pitched (nose up or down) after major impact, and check the appropriate box to indicate if the pitch was up or down. For example, if an aircraft rotates forward about the nose as a fulcrum; i.e., a forward pitching motion, check “down.”

4. Block 4.

a. **Block 4a.** Estimate or analytically determine and enter the vertical force (g’s) at the aircraft center of gravity (CG). Check whether the force was “up” or “down.”

b. **Block 4b.** Estimate or analytically determine and enter the longitudinal force (g’s) at the aircraft CG. Check whether the force was “fore” or “aft.”

c. **Block 4c.** Estimate or analytically determine and enter the lateral force (g’s) at the aircraft CG. Check whether the force was“left” or “right.”

5. Block 5. Enter the case number as shown on the DA Form 2397–1–R.

6. Block 6. Use only for aircraft other than “case aircraft” in accidents involving more than one aircraft. Enter serial number of other aircraft only on each DA Form 2397–6–R that applies to other aircraft.

7. Block 7. This block shows fuselage structural deformation or collapse and its relation to personnel impact injuries. The areas of fuselage most likely to be deformed are stated in items a through f. The location of the deformation is indicated in the four columns labeled cockpit, forward, middle and rear cabin. If the deformation or collapse caused injuries to personnel, the appropriate box of item 7 should be checked. Information in this block shall agree with the injury cause mechanism identified in DA Form 2397–9–R and the life support equipment failure modes identified in DA Form 2397–10–R (Technical Report of U.S. Army Aircraft Accident).

a. **Blocks 7a–e.** Check column(s) 1 through 4 to show the location of deformation for each fuselage area. As a general rule, deformation of 3 inches or less is not enough to be recorded because injuries are not likely to result from such movement. If personnel injuries were caused by fuselage structural deformation, columns 5 through 8 should be checked in the appropriate box. Injuries caused by nonuse of restraint and seat failure and other injuries not related to fuselage deformation are not to be recorded here.

b. **Block 7f.** Check box to indicate whether the floor was deformed locally under the seat structure. This type deformation may occur as a result of external rock or tree stump impact. For example, if one seat

leg floor fitting is pushed upward by at least 2 inches with respect to the other three fittings, check the box. The same applies to sideward or fore–aft movement of the seat leg floor fittings. (NOTE: Photographs should be made of the deformed areas checked under items a through f. At least two photos should be obtained, and they should be taken along mutually perpendicular axes to help offset the effect of distortion.)

8. Block 8. This block indicates the displacement of heavy aircraft components so their potential for injury or for ignition of fires may be evaluated. Only those components expected to be a major hazard are listed under items a through e. Block f provides for the displacement of other heavy components such as engines, prop blades, electrical boxes, etc., which could be a hazard to personnel. Columns 1 through 4 describe the displacement of the components from their normal position.

a. **Blocks 8a–d.** These components are potentially the most hazardous on rotary–wing aircraft. Displacement of single rotor transmission and/or rotor blades are to be checked in items a and c while tandem rotor aircraft are to be checked in items a, b, c, and d as appropriate. If the main rotor hub(s) remain attached to their blades, the hub is assumed an integral part of the blade(s) and is checked under item c or d. If the hub(s) remain attached to the transmission(s), the hub is assumed an integral part of the transmission and displacement is checked under item a or b.

b. **Block 8e.** Check landing gear displacement. Specify which landing gear, wheel, or skid displaces by simply stating the location on the aircraft; i.e., left front, center front, right front, left rear, center rear, right rear. If more than one gear displaces, continue the identities shown above in remarks block (block 11) to indicate the displacement.

c. **Block 8f.** Check this box(es) to identify displacement of heavy component(s) not shown above. If more than one mass is involved, explain in block 10.

(1) *Column 1.* Check box(es) in this column if sufficient displacement has occurred to cause the component to be hazardous even though injuries may not be present. For helicopter transmissions, it is probable that a 10–degree tilt of the transmission and rotor mast will result in a hazardous condition due to fuselage rotor blade strike potential. Likewise, a 6–inch displacement of the transmission, along any axis, will probably result in a hazardous condition. Check the box for rotor blade(s) (item c or d) if it is determined that further blade rotation would result in an occupiable volume blade strike.

(2) *Column 2.* Check box if a major component is separated completely from its normal structural attachment even though the component may still be held by flexible attachments such as control cables or rods and electrical wires.

(3) *Column 3.* Check this box if component actually deformed or penetrated the cockpit “container” sufficiently to create a hazard.

(4) *Column 4.* Check this box if component actually deformed or penetrated the cabin “container” sufficiently to create a hazard. Photographs should be made of the displaced components checked under items a through f. At least two photos should be obtained, and they should be taken along mutually perpendicular axes to help offset the effect of distortion.

9. Block 9.

a. **Block 9a.** Check whether or not aircraft is equipped with crash resistant fuel system.

b. **Block 9b.** If aircraft is equipped with crashworthy fuel system, check to determine whether the breakaway valves in the fuel system did separate.

c. **Block 9c.** Check whether or not flammable fluid spillage occurred. If “yes” box is checked, complete block e.

d. **Block 9d.** Check whether or not aircraft was equipped with auxiliary fuel tanks and indicate if the tanks were internal or external. Also, check the appropriate box which best describes the crashworthiness of the tanks. If the tanks are partially crashworthy, check “No” and explain in the remarks.

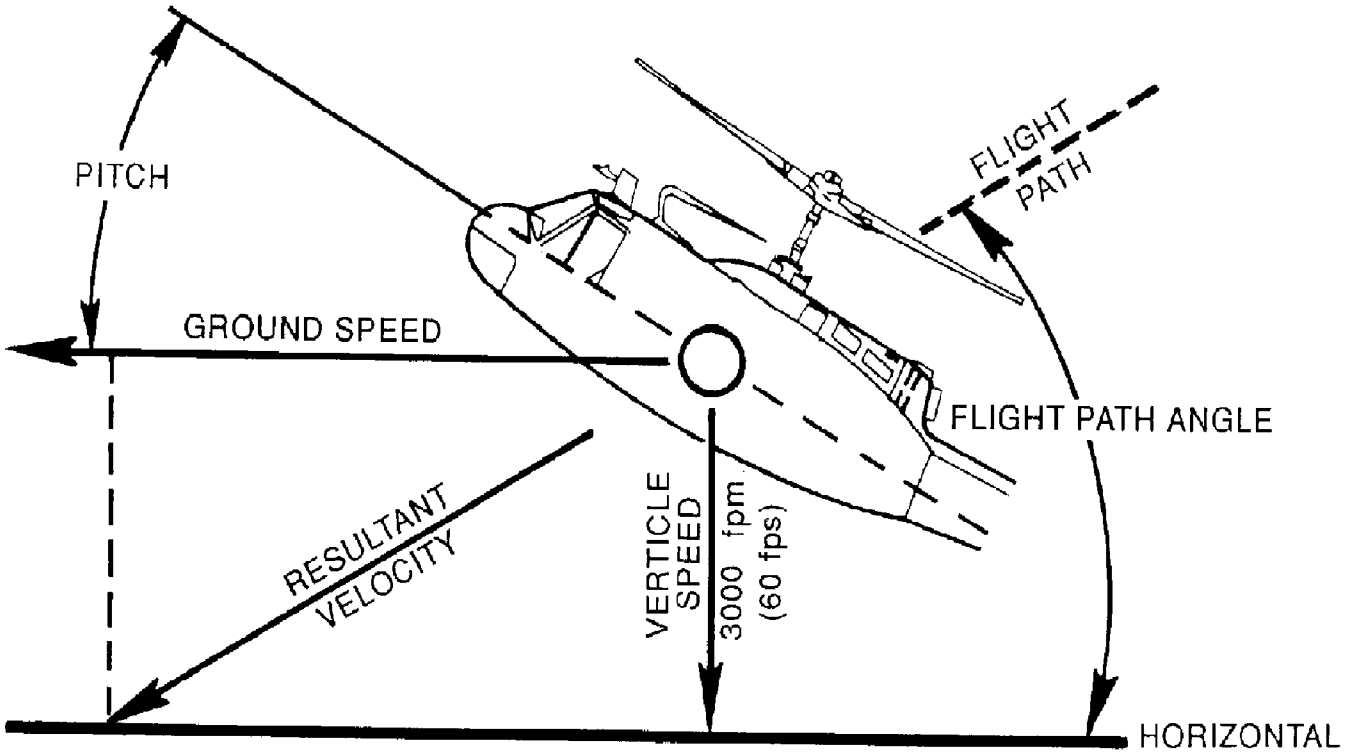
e. **Block 9e.** In the space corresponding with the amount of flammable fluid spilled, enter the type of fluid which was spilled e.g., JP–4, 7808, etc. Example: 15 gallons of JP–4 fuel was spilled, enter JP–4, under the fuel column, adjacent to the >10–20 amount line. The amount of spilled fluid can be estimated by:

(1) The difference between quantity of liquid remaining and fluid before accident, and;

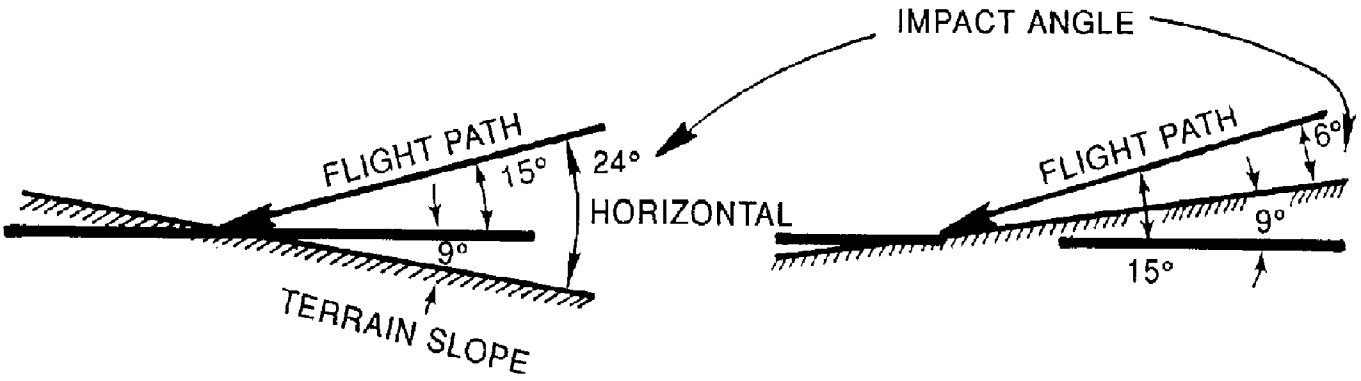
(2) A knowledge of the probable mode of failure in the fluid system; i.e., did fluid trickle out at slow rate or did it gush out all at once?

10. Block 10. Identify one or more spillage sources by writing the name of the part causing or permitting leakage. Rows 7, 8, and 9 may be used to list other sources such as coolers, accumulators, etc. Also, write in the manufacturer’s part number and the NSN. The exact identity of the part causing leakage is desired, not the component or assembly. State cause of fluid spillage in REMARKS. For example, a shift of cargo may have crushed the internal auxiliary fuel tanks.

11. Block 11. Explain in remarks any additional data the investigation board deems appropriate.



Flight path angle



Impact angle

Figure 3-8. Flight path and impact angle

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT
PART VIII - MAINTENANCE AND MATERIEL DATA
For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-309

1. AIRCRAFT HISTORY	
a. Hours Since New	673
b. Hours Since Last Major Repair	
c. Last Phase Inspection (YYMMDD)	930623
d. Hours Flown Since Last Phase Inspection	173
e. Organization Completing Last Phase Inspection (UIC)	WABCDO

2. CAUSATIVE ROLE	D Definite	S Suspected	U Unknown
a. Materiel	X		
b. Maintenance			
c. Design			
d. Manufacture	X		

3. FAILED OR MALFUNCTIONED MATERIEL

Identification	Major Component	Part	Identification	Major Component	Part
a. Nomenclature	Gear Box, Int	Gear, Bevel	h. TAMMS Data		
b. Type, Design, Series			(1) No. of Overhauls	0	0
c. Part Number	70357-06300-042	70357-06314-101	(2) Date of Last Overhaul (YYMMDD)		
d. NSN	1615-01-074-5152	3020-01-112-3065	(3) Hrs Since Overhaul		
e. MFG Code	78286	78286	(4) Hrs Since New	673	673
f. Serial Number	ABC-0714		(5) Hrs Since Last Installed	673	673
g. TM Data			(6) Date Last Installed (YYMMDD)		
(1) TM Number	55-1520-237-23P-2		(7) Last Overhaul Facility		
(2) Date (YYMMDD)	920214		(8) Last Special Insp (Type)		
(3) Functional Group		06	(9) Hrs Since Last Special Inspection		
(4) Figure Number	359	362	(10) Date of Last Spec Inspection (YYMMDD)		
(5) Item Number	16	13	i. Type/Mode of Failure/Malfunction		
			j. Cause of Failure/ Malfunction		
			k. QDR/EIR Number	WDODA930002	

4. WARNING SYSTEM AND INDICATION OF FAILURE/MALFUNCTION

a. Status of Aircraft Warning System for This Part ☐ Operative ☐ Inoperative ☒ NA

b. Indications of Failure/Malfunction ☐ Correct ☐ Incorrect ☒ None

c. Initial Indication of Failure/Malfunction

☐ (1) Vibration	☐ (3) Attitude	☐ (5) Odor	☐ (7) Smoke or Fire	☐ (9) Warning System
☒ (2) Noise	☐ (4) Inspection	☐ (6) Fluid	☐ (8) Other	☐ (10) None/Other

5. TEARDOWN ANALYSIS	a. Organization Performing	b. USASC Control No.
	CCAD	93-302

6. REMARKS (Use additional sheet if required)

Block 3: No special inspections recorded in historical records for component or part.

7. CASE NO.	a. Date (YYMMDD)	b. Time	c. Acft Serial No.	8. OTHER ACFT SERIAL NO.
	931001	1000	9212345	

DA FORM 2397-7-R, JUL 94

Figure 3-9. Sample of a completed DA Form 2397–7–R, Part VIII, Maintenance and Materiel Data

Legend for Figure 3-9;
Completion instructions for DA Form 2397–7–R

1. Block 1. Applies to the aircraft and not the component or part that failed. Enter data from aircraft records. If additional DA Forms 2397–7–R are needed for multiple failed parts from the same aircraft, it is not necessary to duplicate this information.

a. **Block 1a.** Enter the total time on the airframe until the time of the accident. Obtain data from DA Form 2408–13 (Status Information).

b. **Block 1b.** Obtain data from DA Form 2408–15 (Historical Record for Aircraft).

c. **Block 1c.** Enter the date of the last phase inspection. Obtain data from DA Form 2408–15.

d. **Block 1d.** Enter the hours flown since the last phase inspection.

e. **Block 1e.** Enter the 6–digit UIC for the organization that performed the last phase inspection.

2. Block 2. This block shows the causative role of material, maintenance, design, and manufacture as they pertain to the major component/part reported in block 3 of this form.

a. **Block 2a.** Check the appropriate box to show whether or not materiel failure/malfunction of the component/part in block 3 had a causative role in the accident.

b. **Block 2b.** Check the appropriate box to show whether or not a maintenance act of omission or commission had a causative role in the accident.

c. **Block 2c.** Check the appropriate box to show whether or not design had a causative role in the accident. Design is a factor when the component/part failed to perform its specified function because of design inadequacies.

d. **Block 2d.** Check the appropriate box to show whether or not manufacture had a causative role in the accident. Manufacture is a factor when the component/part was not manufactured to meet proper design specifications.

Note: If maintenance was checked as a cause factor in block 2, explain in block 6 or continuation sheet the technical manual or other directive requirement for the maintenance and how the error committed or the omission of a requirement(s) related to the major component/part shown in block 3.

3. Block 3. Fill out major component and part columns in complete detail for each item of material whose failure or malfunction contributed or is suspected of contributing to the cause of the accident. Blocks a–k apply to the component or part, not the aircraft.

a. **Blocks 3a and b.** Obtain from appropriate parts manual. When the major component is an engine, transmission, or gearbox and the aircraft is equipped with more than one like item, identify which major component is listed; e.g., No. 1 engine, forward transmission, 42–degree gearbox, etc.

b. **Block 3c.** The part number should be taken from the part or component if possible. The TM will be used as a source for the part number only if it cannot be determined from the part.

c. **Blocks 3d and e.** Obtain from appropriate technical manual (TM).

d. **Block 3f.** Enter the serial number from the item of material. If the number differs from that contained in the DA Form 2408–16, state this fact in block 6 or on a continuation sheet.

e. **Block 3g.** Obtain from appropriate TM.

f. **Block 3h.** Extract this information from DA Form 2408–16 and DA Form 2410 (Component Removal and Repair/Overhaul Record). Enter the type, date, and hours since the last special inspection on the listed item of material; e.g., “overspeed,” “hard landing,” etc. For components/parts installed during aircraft production, enter “N/A.”

g. **Blocks 3i and j.** Enter the type and cause of failure codes from DA Pam 738–751, Table 1–2.

h. **Block 3k.** Obtain from Standard Form 368 (Deficiency Report).

4. Block 4.

a. **Block 4a.** Check the appropriate block to show status of aircraft warning system(s) for the failed part at time of emergency. If inoperative is checked, explain in block 6 or on a continuation sheet.

b. **Block 4b.** Check the appropriate box to indicate if the warning systems indication of the failure/malfunction provided to the crew was correct for the failed part. If incorrect, explain in block 6 or on a continuation sheet.

c. **Block 4c.** Check the appropriate block to indicate the initial indication of the failure; e.g., a hydraulic warning light illuminates followed by stiffness in the controls, check the warning system block to indicate what first alerted the crew to a failure/malfunction.

5. Block 5.

a. **Block 5a.** Specify the organization/laboratory that performed the teardown analysis.

b. **Block 5b.** Enter the USASC control number, if applicable.

6. Block 6. Explain delays in shipment of failed part, fluid samples, or any other materiel related data deemed appropriate by the board president. If additional space is required, attach continuation sheet.

7. Block 7. Enter the case number shown on the DA Form 2397–1–R.

8. Block 8. Use only for aircraft other than “case aircraft” in accidents involving more than one aircraft. Make entry only on the form identifying the maintenance and materiel data for other aircraft.

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT
PART IX - PERSONAL DATA
For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-309

1. ROLE OF THIS INDIVIDUAL

a. Errors That Caused/Contributed to Accident: [X] Definitely [ ] Suspected [ ] None [ ] Undetermined

b. On Controls When Accident Occurred: [X] Yes [ ] No [ ] Undetermined

2. BACKGROUND DATA

a. Age	33	g. Hours Worked Last 24 Hours	8
b. Hours Awake Prior to Accident	4	h. Hours Worked Last 48 Hours	16
c. Hours Duration Last Sleep Period	8	i. Hours Worked Last 72 Hours	24
d. Hours Slept Last 24 Hours	8	j. Hours Flown Last 24 Hours	4
e. Hours Slept Last 48 Hours	16	k. Hours Flown Last 48 Hours	6
f. Hours Slept Last 72 Hours	24	l. Hours Flown Last 72 Hours	6

3. CREWMEMBER DATA

a. Primary Acft MTDS	UH-60A	j. NVG Qualified [X] Yes [ ] No	
b. Alternate Acft MTDS	OH-58C	k. Date Qualified In Acdt MTDS *(YYMMDD)*	860627
c. Additional Acft MTDS		l. ATM Task Number Associated With Initial Indication of Emergency	
d. FAC [X] 1 [ ] 2 [ ] 3		Last Performed *(YYMMDD)*	
e. RL In Accident Acft MTDS [X] 1 [ ] 2 [ ] 3 [ ] NA		m. ATM Task Number Involved In Response To Emergency	
f. APART Completed *(YYMMDD)*	921222	Last Performed *(YYMMDD)*	
g. Physical Exam Completed *(YYMMDD)*	921201	n. Medical Waiver [ ] Yes [X] No	
h. Most Recent Evaluation Flight In Accident MTDS Acft *(YYMMDD)*	921222	o. Post-Accident Flight Eval *(YYMMDD)* Result	
i. MTDS Acft Flown In Last 60 Days	(1) UH-60A	p. Post-Accident Medical Exam/Autopsy *(YYMMDD)*	931002
	(2) OH-58C	q. Required Lab Tests Accomplished [X] Yes [ ] No	
	(3)		

4. FLIGHT AND CREW DUTY EXPERIENCE *(Round off to the nearest hour)*

a. Type Experience And Time	Rotary Wing	Fixed Wing	Total	Imminent Danger	Combat	Acdt Aircraft Hrs Design	Acdt Aircraft Hrs Series
(1) Military	2459	215	2674	400	595	1280	1280
(2) Civilian		36	36				
(3) Total Hours	2459	251	2710				

b. Duty Experience

Duty	CP	PI	PC	UT	IP	IE	SP	MP	ME	XP
Total Hours	105	242	1637		690					

c. Flight Condition Experience

Condition	D	N	H	W	NG	DG	NS	DS	TR	AA
Total Hours	2234	210	30	75	125					

d. Monthly Flight Hours Past 3 Months In Accident Acft MTDS

Date	Prev 90	Prev 60	Prev 30	This Mo.
Hours	29	23	12	1

e. Other Crew Duty Experience

Duty	CE	OR	AO	MO	FI	SI
Total Hours						

5. MAINTENANCE AND SUPPORT PERSONNEL DATA

a. PMOS Title
b. SMOS Title
c. DMOS Title
d. Deficient Task No.
e. MOS Verification (1) SQT/SDT [ ] Go [ ] No Go
(2) Overall Percentile ____%

f. Civilian Job Series or Title

Performance Standards Met For This Task [ ] Yes [ ] No

6. CASE NO.	a. Date *(YYMMDD)*	b. Time	c. Acft Serial No.	7. OTHER ARCFT SERIAL NO.
	931001	1000	9212345	

DA FORM 2397-8-R, JUL 94

Figure 3-10. Sample of a completed DA Form 2397–8–R, Part IX—Personal Data

8. LABORATORY TESTS

Type Test	Specimen Tested	Results	Name of Drug	USASC Code Block
a. Carbon Monoxide	Blood	3%		
b. Alcohol/Volatiles	Blood	Neg		
c. Drug Screen	Urine	Neg		
d. Other				

9. HISTORY OF DISEASES/DEFECTS

Diagnosis	Method of Discovery				Waivers		USASC Code Block
	Anl Phy	Sick Call	Autopsy	Other	Auth.	Date (YYMMDD)	

10. REMARKS

Block 3L: Cruise flight; no ATM task.
Block 3M: Autorotation for tail rotor failure; no ATM task.

11. NAME (Last, First, MI)	12. SSN	13. GRADE	14. SEX	15. DUTY	16. SVC	17. UIC
PILOT, PETER M.,	987-65-4321	W3	M	PC	A	WABCCO

REVERSE OF DA FORM 2397-8-R, JUL 94

page 2

Figure 3-10. Sample of a completed DA Form 2397–8–R, Part IX—Personal Data—Continued

Legend for Figure 3-10;
Completion instructions for DA Form 2397–8–R

1. Block 1.

a. **Block 1a.** Check "definitely" box if person made an error that caused or contributed to the accident. Do not check the "definitely" box unless the relationship of the error to the accident is fully substantiated in the findings of DA Form 2397–2–R and analysis part of the DA Form 2397–3–R. Check the"suspected" box if the individual committed an error that is suspected to have caused or contributed to the accident. Suspected factors must also be fully substantiated in the DA Forms 2397–2–R and 2397–3–R forms. Check "no" or "undetermined" box as appropriate.

b. **Block 1b.** Check the appropriate box.

2. Block 2. Most items are self–explanatory. Record hours and tenths of hours as appropriate. For items d through l, the 24–, 48–, and 72–hour periods are calculated to the time of the accident.

3. Block 3. Most items in block 3 are self–explanatory. The sources for this information will be the individual's ATM folder and DA Form 759 (Individual Flight Record and Flight Certificate–Army). Those items requiring further explanation are indicated below.

a. **Blocks 3a–h.** Can be obtained from part III of the individual's DA Form 759 (Individual Flight Record and Flight Certificate–Army).

b. **Blocks 3i–k.** Can be obtained from part II of the individual's DA Form 759.

c. **Block 31.** Enter the ATM task number that best describes flight profile (takeoff, climbs, turns, straight and level, hovering autorotation, etc.) that was in progress when the emergency situation developed. An event becomes an emergency whenever an error by the crew, a materiel failure, an obstacle strike, or other unpredictable event creates a need for an emergency response. If no ATM task applies, leave blank and explain the flight profile/activity in block 10.

d. **Block 3m.** Pertains to the ATM task required to cope with the emergency. A tail rotor strike may result in a loss of antitorque control, thereby requiring the performance of the task procedures prescribed for an antitorque malfunction. If no ATM task applies, leave blank and explain the flight profile/activity in block 10.

e. **Block 3n.** If "yes" box is checked, identify in block 9 the condition for which the waiver was granted and the headquarters authorizing the waiver (DA, MEDDAC, etc.). If waiver data clarification is needed, enter a brief explanation in block 10.

f. **Block 3o.** Report an "S" for satisfactory or "U" for unsatisfactory. If result is "U," enter a brief explanation in block 10. If the evaluation has been delayed, enter a "dash" to indicate information is not available and explain delay in block 10.

g. **Block 3p.** Enter date of postaccident medical examination or admission to a medical facility for treatment of injuries resulting from the accident. For non–survivors, enter date of autopsy.

h. **Block 3q.** Check the appropriate box to indicate if the blood and urine laboratory test required by AR 385–40, paragraph 4–4 were accomplished.

4. Block 4. Flight and crew duty experience will be completed for all crewmembers specified in paragraph 3–11, requiring a DA Form 2397–8–R. The source of this data is the individual's DA Forms 759 and 759–1 (Individual Flight Record and Flight Certificate–Army Aircraft). Flight experience will be recorded to the nearest hour (no tenths).

a. **Block 4a(1).** Pertains to flight experience, involving military operations, by category of aircraft. Combat, imminent danger, and flight experience in accident MTDS aircraft is also recorded in this block.

b/ **Block 4a(2).** Civilian. Civil flight experience regardless of duty, not involving military operations, e.g., flying clubs, instructional, hobby, pleasure, commercial, etc., is to be entered in this block by category of aircraft.

c. **Block 4a(3).** Total time. Self explanatory.

d. **Blocks 4b and e.** Duty experience. Block b pertains to rated aviator duties and item e pertains to other crew duty experience. Enter the total time for the duty listed. The source of this information is the individual's DA Form 759–1.

e. **Block 4c.** Flight condition experience. Enter the total flight hour experience in block 4c(1) for flight conditions listed. The source of this information is the individual's DA Form 759–1.

f. **Block 4d.** Monthly flight hours. Pertains to flight time in accident MTDS aircraft for the current calendar month plus the preceding 30, 60, and 90 days up to and including the accident flight.

5. Block 5. Pertains to maintenance, medical, support, and other non–rated personnel only. For blocks 5a, 5b, and 5c enter the individuals MOS designation and title. The information source is the individual's personnel qualification record.

a. **Block 5d.** Enter the task number associated with the error the individual committed. The source of the task number will be the soldier's manual (SM), ATM or the commander's guide (TC 1–210) that addresses the task.

b. **Block 5e.** Self explanatory.

c. **Block 5f.** Applies to government civilian employees. Source of information is the individual's job description and performance standards. If "no" box is checked, enter a brief explanation in block 10.

6. Block 6. Enter the case number shown on DA Form 2397–1–R.

7. Block 7. Complete block 6 only if form applies to personnel associated with an aircraft other than "case aircraft" in accidents involving a multiple aircraft event.

8. Block 8. Record toxicological laboratory analysis results. In the "specimen tested" column, enter "blood", "urine", etc., to indicate the source of the specimen; if no specimen was tested, enter "none". Enter "Pos" in the results block for drugs identified as present and the drug name in the appropriate box. If drug(s) was/were administered by medical personnel following the accident but prior to collection of the test specimen, record this information in block 10. Use standard terminology to report methods and results. IAW AR 385–40, paragraph 4–4, the tests listed as items a, b, and c, are MANDATORY for ALL crewmembers and/or any fatality even if there seems to be no apparent likelihood of positive results. Timeliness of test is important and the specimens should be acquired as soon as possible following the accident. Significant results should be briefly explained in block 10 and thoroughly discussed in the analysis part of the narrative (DA Form 2397–3–R). If specimen testing was required by AR 385–40 but not accomplished, explain why it was not accomplished in block 10 (Remarks).

9. Block 9. Complete block 9 if block 3n is checked "yes" or autopsy report reveals significant findings of pre–existing diseases/defects.

10. Block 10. Significant medical history pertinent to the accident investigation should be briefly explained in block 10. Medical history that contributed to the accident or may have had bearing on the accident will be explained on the DA Form 2397–3–R.

11. Block 11. Self–explanatory.

12. Block 12. Enter the individual's social security number.

13. Block 13. Enter grade code. Select code from Table 3–8.

14. Block 14. Enter "M" to indicate male or "F" to indicate female.

15. Block 15. Enter duty code. For crewmembers enter the duty

code recorded on the DA Form 2408–12. For other personnel, select code from list at Table 3–5.

16. Block 16. Enter personnel service code. Select service code from list at Table 3–9.

17. Block 17. Enter a 6–digit UIC of unit to which this individual was assigned at time of accident.

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT
PART X - INJURY/OCCUPATIONAL ILLNESS DATA

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-309

1. DEGREE OF INJURY *(Check only the most severe injury)*

a. [X] Fatal
b. [ ] Permanent Total Disability
c. [ ] Permanent Partial Disability
d. [ ] Lost Workday *(Days away from work)*
e. [ ] Workday of Restricted Activity
f. [ ] No Lost Workday or Restricted Activity
g. [ ] First Aid Only
h. [ ] Missing and Presumed Dead

2. NUMBER OF LOST WORKDAYS	a. Days Away From Work	b. Days Hospitalized	c. Days of Restricted Activity

3. UNCONSCIOUS Hrs ____ Min ____ [X] None

4. AMNESIA Hrs ____ Min ____ [X] None

5. INJURIES

Seq No. a.	Injuries: Body Region b.	Primary Aspect c.	Secondary Aspect d.	Inj Type/Result e.	Abbreviated Injury Scale f.	Mechanism: Action g.	Mechanism: Qualifier h.	Cause Factors: Subject i.	Cause Factors: Action j.	Cause Factors: Qualifier k.
	B06	01	07	F04	113006	05	19	19	16	13
1	Skull	Right	Upper	Crush	Massive Destruction of both cranium (skull) &brain	Struck By	Main Rotor	Main Rotor	Penetrated	Occupiable Space
	C20	03	07	F13	640276	05	19	19	16	13
2	Multiple Vertebra	Bilateral	Upper	Fracture Dislocation	Cord w/Fracture and Dislocation	Struck By	Main Rotor	Main Rotor	Penetrated	Occupiable Space

6. REMARKS *(Use additional sheet if required)*

7. AUTOPSY PERFORMED	8. CAUSE OF DEATH	9. DUTY STATUS
a. [X] Yes b. [ ] No	Skull fractures, multiple, severe	a. [X] On Duty b. [ ] Off Duty

10. NAME *(Last, First, MI)*	11. SSN	12. GRADE	13. SEX	14. DUTY	15. SVC	16. UIC
PILOT, PETER M.	987-65-4321	W3	M	PC	A	WABCCO

17. CASE NO.	a. Date *(YYMMDD)*	b. Time	c. Acft Serial No.	18. OTHER ACFT SERIAL NO.	19. INJURY COST
	931001	1000	9212345		$1,100,000

DA FORM 2397-9-R, JUL 94

Figure 3-11. Sample of a completed DA Form 2397–9–R, Part X—Injury/Occupational Illness Data

Legend for Figure 3-11;
Completion instructions for DA Form 2397–9–R

1. Block 1. Check the appropriate box to indicate the highest degree of injury for this individual. Degrees of injury are defined below:

a. **Block 1a.** Self–explanatory.

b. **Block 1b.** Permanent total disability. Any nonfatal injury or occupational illness that in the opinion of competent medical authority, permanently and totally incapacitates a person to the extent that he cannot follow any gainful employment.

c. **Block 1c.** Permanent partial disability. Any injury or occupational illness that does not result in death or permanent total disability but, in the opinion of competent medical authority, results in permanent impairment through loss or loss of use of any part of the body, with the following exceptions:

(1) Loss of teeth;

(2) Loss of fingernails or toenails;

(3) Loss of tips of fingers or tips of toes.

d. **Block 1d.** Lost work day. An injury or occupational illness that results in no disability as defined above but results in the individual missing one or more workdays. Days away from work are those workdays (consecutive or cumulative) that the person would have worked but could not because of injury or occupational illness. Excluded are days that the person would not have worked even though able to work, and the day of the injury or onset of occupational illness. Rearrangement of work schedules is not authorized to eliminate the requirement for reporting days away from work cases.

e. **Block 1e.** Workday(s) of restricted work activity. An injury or occupational illness in which a workday was not lost but in which the individual:

(1) Was assigned to another job on a temporary basis;

(2) Worked at a permanent job less then full time;

(3) Worked at a permanently assigned job but could not perform all duties normally connected with it; e.g., temporary profile limiting their duties, air crewmember who is grounded, etc.

f. **Block 1f.** No lost workday. An injury or occupational illness that did not result in a lost workday nor restricted work activity, but resulted in the individual:

(1) Being permanently transferred to another job or terminated.

(2) Requiring medical treatment greater than first aid (as defined below).

g. **Block 1g.** First aid only. A one–time treatment for minor scratches, cuts, burns, and similar injuries that does not require additional medical attention or any follow–up visits for observation. Such one–time treatment will be considered first aid even if provided by a physician.

h. **Block 1h.** Missing and presumed dead: Individual not located at time of report.

2. Block 2. If block “d” or “e” was checked in block 1, enter number of days away from work, the number of days hospitalized, and days of restricted work activity in spaces provided. Ensure that days away from work (2a) is not inclusive of days hospitalized (2b).

3. Block 3. If the person was unconscious, enter the duration in hours and minutes, and show the cause and mechanism, if known, in block 5. If none, check none.

4. Block 4. If amnesia was present, show duration and explain in block 6. If amnesia was not present, check none.

5. Block 5. Describe individual injuries in descending order of severity and associated cause factors, using the applicable information codes following these instructions.

a. **Column a.** Enter number “1” for most severe injury followed by “2,” “3,” etc., until all injuries have been listed. Only seven injuries can be recorded per individual per form. Use additional DA Form 2397–9’s when greater than seven injuries are coded.

b. **Columns b through e.** Using information codes at Table 3–10 following these instructions, enter the appropriate numeric and/or alpha numeric code in each column. In the appropriate space below the code, enter the word(s) describing the injury.

c. **Column f.**

A physician or physician’s assistant is required to complete the abbreviated injury scale (AIS) block. The reference to complete the AIS block is available at all installation safety offices and medical facilities. If the AIS reference is not available, leave blank and note in the remarks block.

d. **Columns g and h.** Enter the action code and qualifier code from Table 3–10 that best describe the injury mechanism (how the injury occurred).

e. **Columns i, j, and k.** Enter the subject, action, and qualifier codes from Table 3–10 which best describe, from an engineering viewpoint, what aspects of the aircraft contributed to the injury cause factors (why injury occurred). The purpose of these columns is to select those subject, action, and qualifier codes that form a sentence or phrase that describes what aspect of the engineering/design of the aircraft should be looked at for potential modification to avoid a similar injury in a future similar accident. For example, if the occupants of an aircraft sustained postcrash burns due to fuel lines breaking in the crash sequence, one could code: Subject: “10, Fuel lines,” Action: “03, Broke,” Qualifier:“07, Improperly.”

6. Block 6. Enter any additional information which further clarifies information coded on the DA Form 2397–9–R. For instance, if the flight surgeon feels that the available codes do not describe the injuries, the mechanism of injury, or the injury cause factors, this block provides the opportunity for further description. It is imperative that any additional information be linked to a specific block/column on the form.

7. Block 7. Check the appropriate box to indicate whether or not an autopsy was performed. If an autopsy was not performed, explain why. Use block 6 if additional space is needed.

8. Block 8. Report the official cause of death, based on an autopsy report, if possible.

9. Block 9. Check the appropriate duty status for government personnel.

10. Blocks 10 through 16. Enter appropriate information for the individual concerned. Refer to instructions covering same information for DA Form 2397–8–R.

11. Block 17. Enter the case number shown on DA Form 2397–1–R.

12. Block 18. Use only in cases involving more than one aircraft. Enter the serial number of other aircraft only on the DA Form(s) 2397–9–R that pertain to personnel injuries associated with the other aircraft.

13. Block 19. Enter the injury/fatality cost IAW AR 385–40, Table 2–1.

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT
PART XI - PERSONNEL PROTECTIVE/ESCAPE/SURVIVAL/RESCUE DATA

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL CSOCS-309

1. DID THIS INDIVIDUAL SUSTAIN AN INJURY OR OCCUPATIONAL ILLNESS BECAUSE OF ACCIDENT? ☒ Yes ☐ No
(NOTE: If "yes" box is checked, ensure a DA Form 2397-9-R is completed for this individual)

2. PERSONNEL PROTECTIVE/RESTRAINT/SURVIVAL EQUIPMENT

Item	Type (1)	Required (2)	Available (3)	Used (4)	Produced Injury (5)	Allowed Injury (6)	Prevented Injury (7)	Reduced Injury (8)	Functioned as Designed (9)	Information Codes (10)			
a. Helmet	SPH-4B	Y	Y	Y	N	Y	N	N	Y	1007	1099		
b. Visor													
c. Glasses													
d. Flight Suit													
e. Flight Gloves													
f. Flight Jacket													
g. Boots													
h. Other Clothing													
i. Lap Belt													
j. Shoulder Harness													
k. Gunner Harness													
l. Inertia Reel													
m. Seat/Litter													
n. Survival Equipment													
o.													
p.													

3. PERSONNEL EVACUATION/ESCAPE

	Information Codes				
a. Method of Escape	1				
b. Location in Aircraft	1	1	3	1	2
c. Exit Attempted	0				
d. Exit Used	0				
e. Aircraft Attitude During Escape	0				
f. Cockpit/Cabin Conditions	A0				
g. Escape Difficulties	3				

4. LAPSED TIME FOR RESCUE

	Date MM	Date DD	Hour of Day HR	Hour of Day MIN	Lapsed Time HR	Lapsed Time MIN
a. Notification of Rescue Personnel						
b. Individual Physically Reached						
c. Individual Actually Aboard Rescue Vehicle						
d. Rescue Completed/Abandoned						

5. DISTANCE FROM ACCIDENT TO ACTUAL RESCUE VEHICLE AT TIME OF ACCIDENT

a. To Aircraft in Nautical Miles: 25

b. To Ground Vehicle in Statute Miles: 33

6. PERSONNEL SURVIVAL/RESCUE

	Information Codes
a. Survival Problems Encountered	
b. Means Used to Locate Individual	
c. Rescue Equipment Used	
d. Factors That Helped Rescue	
e. Factors Complicating Rescue	
f. Individual Physical Condition	4
g. Vehicles Actually Performing Evacuation *(Specify)*	UH-60Q
h. Other Vehicles Assisting in Rescue *(Specify)*	Civilian ambulance

7. REMARKS *(Use additional sheet if required)*

Helmet was struck by main rotor blade, producing fatal injury.

8. NAME (Last, First, MI)	9. SSN	10. GRADE	11. SEX	12. DUTY	13. SVC	14. UIC
PILOT, PETER M.	987-65-4321	W3	M	PC	A	WABCCO

15. CASE NO.	a. DATE (YYMMDD)	b. Time	c. Acft Serial No.	16. OTHER ACFT SERIAL NO.
	931001	1000	9212345	

DA FORM 2397-10-R, JUL 94

Figure 3-12. Sample of a completed DA Form 2397–10–R, Part XI—Personnel Protective Escape/Survival/Rescue Data

Legend for Figure 3-12;
Completion instructions for DA Form 2397–10–R

1. Block 1. Check the appropriate box. If the "yes" box is checked, ensure that a DA Form 2397–9–R is completed for this individual.

2. Block 2. Personnel protective/restraint/survival equipment. The first column lists the major, common items of equipment worn/used by air–crewmen and passengers. Report ONLY those items which had a role in the cause/prevention/reduction of an injury or failed to function as designed. Also list in block 2(o) or 2(p) other protective/survival items of equipment which, if available, could have prevented/reduced an injury or assisted in the rescue and survival efforts. Complete the columns to the right of each item that had a role in the accident, as follows: For columns (2)–(9) enter "Y" for "yes", "N" for "no", and "U" for "unknown." For column 10, select the appropriate equipment information codes from Table 3–11.

a. **Column (1)–Type.** Enter the type of equipment in the "type" column; e.g., helmet—enter SPH–4, SPH–4B; visor—enter clear, or tinted, or anti–laser; glasses—enter prescription, nonprescription, tinted, untinted, contact lenses, inserts, anti–laser, etc.; flight suit—enter nomex, etc.

b. **Column (2)–Required.** Enter "Y" for items that were required for the mission by directives; i.e., Army regulations, major command/unit SOPs, etc., or "N" for items not required, but which could have reduced the injury severity.

c. **Column (3)–Available.** Make appropriate entry for each applicable item that was available to the individual.

d. **Column (4)–Used.** Make appropriate entry for each applicable item used. Just because an item was available does not mean it was used. Used pertains to the use of an item as intended for the condition/situation.

e. **Column (5)–Produced injury.** An item of equipment may have produced an injury by its use or by its malfunction. For example, a lapbelt may have produced an injury to the individual (bruise on hip) but still may have prevented or reduced further injuries.

f. **Column (6)–Allowed injury.** An item of equipment may have allowed injury due to the forces of the accident exceeding the design of the equipment, or an individual not properly wearing or utilizing the item; i.e., the chin strap of the helmet not being secured.

g. **Column (7)–Prevented injury.** An item may have prevented an injury by its use even though the item received damage; e.g., damage was done to the helmet, but the individual did not receive an injury. If no injury occurred to the area protected by the item then enter "Y."

h. **Column (8)–Reduced injury.** An item may have reduced the severity of an injury; e.g., the individual received a severe blow to the head and incurred a head injury, but the helmet reduced the severity of the injury.

Note: Columns (6) and (7) cannot be marked "Y" for the same item. An item cannot allow and prevent an injury at the same time. Likewise columns (7) and (8) cannot be marked "Y" for the same item. If an injury is prevented, there is nothing to reduce.

i. **Column (9)–Functioned as designed.** This column is used to indicate the performance of equipment during the accident sequence to include rescue and survival. For example, if it is determined that the item performed the job for which it was intended, enter "Y" for "yes." If the item was damaged, explain the damage in the "information codes" column. For all items that did not perform their intended function, enter "N" for "no" in the "functioned as designed" column and explain in the "information codes" column with the appropriate codes.

j. **Column (10)–Information codes.** The four columns under this title are used to report equipment problems/conditions pertaining to the performance of personnel, protective, restraint, and survival equipment. There are four blocks provided for each item of equipment to permit the identification of up to four separate problems/conditions. Each item with a problem/condition will able coded with a four–digit information code from Table 3–11 e.g., if a helmet dislodged and the individual received a head injury due to its loss, enter "N" in columns (7), (8) and (9) for the helmet row and enter the code 1122 in the "information codes" column; i.e., 11 (dislodged), 2 (nape strap), 2 (loose). All undamaged items that performed their job do not require codes in the"information codes" column.

k. **Survival equipment components.** The empty spaces in block 2 (o and p) are to be used to report problems/conditions with specific items of survival equipment/components. These are to be entered in the"information codes" columns using four–digit codes. More than one problem/condition may apply to any of the survival equipment/components. The first two digits are obtained from the survival equipment/component list and the second two digits are obtained from the problem/condition code at Table 3–12. Examples are:

(1) An aviator's SDR–5/E strobe light failed during use because the battery became inoperative. Enter STROBE LIGHT in one of the empty spaces (o or p). The "type" would be entered as SDR–5/E. Any other column across the page may be used as applicable. The first four–digit code entered in the first "information codes" column should be 8438; the second four–digit code should be 8440.

(2) An aviator could not get a survival radio before the mission because the radios were locked up in supply. Enter SURVIVAL RADIO in an available empty space (o or p). The "type" would be entered as PRC–90. The four–digit code entered in the "information codes" column would be 8101.

(3) In the event of a nonsurvivable accident in which there were no attempts to use the survival equipment/components, no entry is required unless the accident investigation board feels such reporting would benefit accident research/analyses.

(4) If an item of equipment is used that is personal property (non–issue); i.e., pocket knife or plastic compass, and a problem/condition exists; e.g., "lost," enter the item in blank spaces o or p (block 2) as "pocket knife" and "personal" in the "type" column. The four–digit code in the"information code" column should be 9936.

3. Block 3. Personnel Evacuation/Escape.

a. **Block 3a.** Method of Escape. Enter the appropriate information codes from Table 3–13 in the space provided.

b. **Block 3b.** Location in aircraft. Enter individual's location in the aircraft at the time of the accident in the boxes provided using the codes at Table 3–14. For example, an aviator was in the cockpit, forward section, left side, facing forward, in his seat. Code in sequential blocks 1, 1, 2, 1, 2 (one number per block).

c. **Block 3c.** Exit attempted. Enter information code(s) from Table 3–15 in order and in sequence if more than one exit attempt was made. The last coded entry, if more than one exit was attempted, will be the exit used by the individual to egress; e.g., the normal exit was tried but it jammed, so exit was made through an opening in the aircraft wreckage. Code "1" in the first box and code "3" in the second box.

d. **Block 3d.** Exit used. Enter the code from Table 3–16 for actual exit used. The exit used may often be the same as the exit attempted.

e. **Block 3e.** Aircraft attitude at time of escape. Enter information code from Table 3–17 to best describe the attitude of the aircraft at time of escape.

f. **Block 3f.** Cockpit/cabin condition. Enter the cockpit/cabin condition code from Table 3–18. Consider only that portion of the aircraft this individual occupied at the time of the accident. Disregard postcrash fire damage (see instructions for DA Form 2397–1–R for definitions of the following terms):

g. **Block 3g.** Escape difficulties. From Table 3–19 select those difficulties the individual experienced. A total of six may be selected. Enter only one two–digit code per block. Occupants fatally injured during the mishap do not require an entry.

4. Block 4. Cumulative lapsed time for rescue. Enter local time in the appropriate blocks using the 24–hour clock. Lapsed time will be the

cumulative number of hours/minutes from time of the accident for each phase. Leave blank if fatally injured at impact.

5. Block 5. Distance from accident site to actual rescue vehicle at time of accident. Enter nautical miles (NM) for airborne rescue vehicles or statute miles (SM) for ground rescue vehicles.

6. Block 6. Personnel survival/rescue. Enter the appropriate information codes in the spaces provided. Use one two–digit code per block.

a. **Block 6a.** Survival problems encountered. Review the list at Table 3–20 for potential problems this individual may have encountered and enter codes sequentially in the boxes provided. Occupants fatally injured during crash do not require an entry for items a through e.

b. **Block 6b.** Means used to locate individual. Enter, in sequence, information codes from Table 3–21 for means used to locate individual.

c. **Block 6c.** Rescue equipment used. Enter code in sequence of items used from Table 3–22.

d. **Block 6d.** Factors that helped rescue. Enter codes from Table 3–23 which assisted in the rescue of the individual.

e. **Block 6e.** Factors that complicated rescue. Enter the code from Table 3–24 which complicated the rescue of the individual.

f. **Block 6f.** Individual's physical condition. Enter the codes from Table 3–25 which best describes the individual's physical condition.

g. **Block 6g.** Vehicle(s) actually performing evacuation. Enter the type vehicle(s) performing the evacuation. If the vehicle is an aircraft, enter the mission, type, design and series; i.e., UH–1H. if vehicle is a motor vehicle, state type; i.e., military ambulance, civilian ambulance, private auto, etc.

h. **Block 6h.** Other vehicles assisting in rescue. Refer to "g" above and enter the type vehicle(s) which assisted in the rescue.

7. Block 7. *Remarks.* Explain failures, malfunctions, injuries, and other problems not adequately defined by code terms. When "other" is coded, use this block to explain details.

8. Blocks 8. Self–explanatory.

9. Block 9. Enter the individual's social security number.

10. Block 10. Enter grade code. Select code from Table 3–8.

11. Block 11. Enter "M" to indicate male or "F" to indicate female.

12. Block 12. Enter duty code. For crewmembers enter the duty code recorded on the DA Form 2408–12. For other personnel, select code from list at Table 3–5.

13. Block 13. Enter service code. Select service code from list at Table 3–9.

14. Block 14. Enter a 6–digit UIC of unit to which this individual was assigned at time of accident.

15. Block 15. Enter the case number shown on DA Form 2397–1–R.

16. Block 16. Use only in cases involving more than one aircraft and make entry only on the form identifying personnel from the other aircraft.

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT
PART XII - WEATHER/ENVIRONMENTAL DATA

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL CSOCS-309

1. ENVIRONMENTAL ROLE *(Check "D, S, U, or N" to indicate Definite, Suspected, Undetermined, or None)*

a. Weather Role	☐ D ☐ S ☐ U ☒ N
b. Other Environmental Condition *(Specify in blk 9)*	☐ D ☐ S ☐ U ☒ N

2. GENERAL DATA AT TIME OF OCCURRENCE

a. Temperature +32 °C *(est)*	d. Pressure Altitude *(+or-)* −60 '
b. Altimeter Setting *(HG)* 29.98	e. ☐ IMC ☒ VMC
c. Altimeter Reading *(MSL)* UNK	

3. SKY CONDITION

a. Clear	X	d. Overcast (feet)	
b. Scattered (feet)		e. Partial Obscuration	
c. Broken (feet)		f. Obscuration	

4. HORIZON

a. Visible	X	c. Obscured	
b. Partially Obscured			

5. VISIBILITY *(Naut. miles)* 15

6. OBSTRUCTION TO VISION

a. Natural		(7) Blowing Dust	
(1) Dust		(8) Blowing Sand	
(2) Fog		(9) Blowing Snow	
(3) Ground Fog		(10) Sun	
(4) Haze		(11) Rain	
(5) Ice Fog		(12) Other *(Specify)*	
(6) Smoke		(13) None	X
b. Induced (rotorwash, etc.)			
(1) Blowing Snow		(4) Blowing Spray	
(2) Blowing Sand		(5) Other *(Specify)*	
(3) Blowing Dust		(6) None	X

7. WINDS

a. Aloft *(at en route altitude)*	Dir 070 Velocity 25
b. Surface Winds	(1) Surface Wind Dir. and Variance 090
	(2) Surface Wind Velocity and Gust Spread *(KT)* 10G18

8. SIGNIFICANT WEATHER *(a maximum of three may be selected)*

a. Hail		h. Thunderstorm	
b. Sleet		i. Gusty Winds	
c. Fog		j. Freezing Rain	
d. Drizzle		k. Other *(Specify)*	
e. Rain		l. Unknown	
f. Snow		m. None	X
g. Lightning			

9. OTHER ENVIRONMENTAL CONDITIONS PRESENT DURING ACCIDENT SEQUENCE

a. Animals		h. Foreign Objects	
b. Fowl		i. Temperature	
c. Surface		j. Vibration	
d. Noise		k. Dust	
e. Chemicals		l. Other *(Specify)*	
f. Radiation		m. None	X
g. Glare			

10. AIRCRAFT ICING ☒ None ☐ Yes

	Icing Severity			
	Trace (1)	Light (2)	Moderate (3)	Severe (4)
a. Main Rotor Blades				
b. Wings				
c. Propellers				
d. Control Surfaces				
e. Rotor Head				
f. Tail Rotor				
g. Fuselage				
h. Pitot Static System				
i. Aileron				
j. Engine Air Inlet				
k. Fuel Vents				
l. Antenna				
m. Windscreen				
n. Other				

11. MOON ILLUMINATION DATA *(for night accidents)*

a. Moon Above Horizon	☐ Yes ☐ No
b. Moon Visible	☐ Yes ☐ No
c. Moon ____ Degrees Above Horizon	
d. Percent of Moon Illumination	
e. Moon ____ O'clock Position From Flight Path/Nose of Aircraft	
f. Time *(LCL)* of Moon Rise and Set ____ L Rises ____ L Sets	

12. TURBULENCE

☐ None ☒ Yes *(If "Yes" check "C" for continuous, "I" for intermittent, and "O" for occasional)*

	C	I	O
a. Light			X
b. Moderate			
c. Severe			
d. Extreme			
e. None			

13. FORECAST ☒ Correct ☐ Incorrect ☐ Unknown

14. REMARKS *(Use additional sheet if required)*

Block 2c: Aircraft altimeters damaged in accident.

15. CASE NO.	a. Date *(YYMMDD)*	b. Time	c. Acft Serial No.
	931001	1000	9212345

DA FORM 2397-11-R, JUL 94

Figure 3-13. Sample of a completed DA Form 2397–11–R, Part XII—Weather/Environmental Data

Legend for Figure 3-13;
Completion instructions for DA Form 2397–11–R

1. Block 1. Check the appropriate box to indicate if weather or other environmental condition caused or contributed to the accident. Weather is a definite or suspected factor only when not forecast, improperly forecast or when it was unavoidable in the accident sequence of events. See chapter 2, paragraph 2–6, for a complete discussion on determining the environmental role in the accident.

2. Block 2.

a. **Block 2a.** Specify in degrees centigrade. If the temperature is actual, line out"est".

b. **Blocks 2b and c.** Enter the altimeter setting in inches of mercury (Hg) and altimeter reading in feet at the time of the accident. This must be taken as soon as possible from the accident aircraft's altimeter. If the altimeter was damaged so that the setting cannot be determined, enter "unknown" and explain in block 14 or continuation sheet. Do not use estimates.

c. **Block 2d.** Prefix the pressure altitude with a plus or minus.

d. **Block 2e.** Check the appropriate box which reflects the general weather conditions at the time and location of the accident.

3. Block 3. When a scattered, broken, or overcast sky condition is checked, specify the altitude in the space provided.

4. Block 4. Check the appropriate box.

5. Block 5. Enter visibility in nautical miles.

6. Block 6. Obstructions to visibility are shown in the two basic categories of "natural" and "induced." If visibility was restricted, it is extremely important to accurately distinguish between natural and induced.

a. **Block 6a.** More than one may apply; e.g. haze and smoke may both have existed at the same time during the accident sequence; therefore, both would be checked.

b. **Block 6b.** Check the induced obstructions to visibility that existed during the accident sequence. For example, if the crew lost all reference when they came to a hover due to rotorwash picking up and circulating a large cloud of dust, check block 6b(3),"blowing dust."

7. Block 7. Use existing winds at the time of the accident.

a. **Block 7a.** Enter the winds aloft at the assigned or enroute altitude.

b. **Block 7b(1).** Enter surface wind direction in degrees magnetic. If wind direction is varying e.g., "350 variable 010," enter the average wind direction on this line"360/10".

c. **Block 7b(2).** Enter surface wind velocity in knots and gust spread. If surface winds are gusty, enter the surface winds as reported; e.g., for winds reported as 20 knots gusting to 38 knots, enter as"20 G 38," (gust spread of 18).

8. Block 8. Indicate significant weather present at the time of the accident. A maximum of three conditions may be checked.

9. Block 9. Indicate other environmental factors that caused, contributed to, or may have influenced human performance that caused or contributed to the accident.

10. Block 10. If aircraft icing was present during the accident sequence, place an X in the "yes" block and indicate those portions of the aircraft affected by placing an X in the appropriate severity column.

11. Block 11. To be completed for night accidents only. If item a is checked "No," no other entries are required.

12. Block 12. If turbulence existed, check the appropriate block.

C—Continuous (More than two–thirds of the time.)

I—Intermittent (One–third to two–thirds of the time.)

O—Occasional. (Less than one–third of the time.)

If no turbulence existed, check "None."

13. Block 13. Check whether forecast was correct or incorrect. If not known, check "unknown" box.

14. Block 14. Discuss other environmental factors not covered by this form or items that need further explanation.

15. Block 15. Enter the case number shown on the DA Form 2397–1–R.

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT
PART XIII - FIRE DATA *(To be completed for all events involving fire)*
For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-309

1. FIRE STARTED *(Check D - Definite S - Suspected)*	D	S
a. Inflight		
b. Upon Impact *(Less than 1 minute)*		
c. Upon Impact *(More than 1 minute)*	X	
d. During Refueling		
e. Other *(Specify)*		
f. Undetermined		

2. INDICATIONS OF FIRE *(More than one may apply. Enter 1, 2, or 3 to show sequence)*

a. ☐ Fire Warning System d. [2] Smell g. ☐ Other *(Specify)*
b. ☐ Other Instruments e. ☐ Explosion *(Sound)*
c. [1] Sight f. ☐ External Commo

3. INITIAL AND PRINCIPAL LOCATION OF FIRE *(Enter 1 to indicate initial location, 2 to indicate principal location)*	D	S
a. Engine Section		
b. Transmission Section		
c. Cockpit		
d. Tail Assembly		
e. Passenger Section		
f. Baggage Compartment		
g. External Stores		
h. Ammunition Stores		
i. Avionic Section		
j. APU		
k. Wheel Well		
l. Wheel Brake		
m. Tail Pipe	1	
n. Instrument Panel		
o. Battery Compartment		
p. Heater Compartment		
q. Fuel Cell *(Specify)*		
r. Wing		
s. Gun Turret		
t. Tail Boom		
u. Cargo Section		
v. Tires		
w. Other *(Specify)* Dry grass near tailpipe	2	
x. Undetermined		

4. IGNITION SOURCE	D	S
a. Exhaust Flames		
b. Sparks, Friction, e.g., Skidding		
c. Electrical Sparks		
d. Hot Surfaces, e.g., Exhaust Ducts	X	
e. Aircraft Subsystem		
f. Aircraft Occupant, e.g., Lighted Cigar		
g. External of Aircraft, e.g., Grass Fire		
h. Cargo		
i. Explosives		
j. Short Circuit		
k. Lightning		

4. IGNITION SOURCE *(Continued)*	D	S
l. Static Electricity		
m. Other *(Specify)*		
n. Undetermined		

5. COMBUSTIBLE MATERIAL	D	S
a. Main Fuel		
b. Auxiliary Fuel		
c. Hydraulic Fluid		
d. Engine Oil		
e. Transmission Oil		
f. Electrical Insulation		
g. Acoustical Materials		
h. Metal *(Specify)*		
i. Explosives		
j. Upholstery Materials		
k. Cargo		
m. External Material *(Specify)* Dry Grass	X	
n. Other *(Specify)*		
o. Undetermined		

6. FIRE EXTINGUISHING SYSTEM	a. Gnd	b. Aircraft Inst	b. Aircraft Port
(1) No Effect When Discharged		X	
(2) Activated, But Did Not Discharge			
(3) Reduced Fire			
(4) Extinguished Fire			X
(5) Not Activated And Not Near Fire			
(6) Not Activated, But Near Fire			
(7) Not Installed			

7. FIRE SMOKE DETECTION SYSTEM	Yes	No	Undet
a. System Installed	X		
b. Warning System Operated Properly			
c. Sensors Within Range of Smoke/Fire		X	

8. EFFECT OF EMER SHUTOFF PROCEDURE *(Enter D, S, or U)*	Eng	Fuel	Elect
a. Extinguished Flame			
b. Reduced Fire			
c. No Effects	D	D	D
d. Not Accomplished			
e. Used Faulty Procedure			

9. GENERAL DATA

a. Est of Aircraft Fire Damage *(Excl of impact damage)*
☒ 0-25% ☐ 26-50% ☐ 51-75% ☐ 76-100%

b. Fire Dimension: To Clear Fire, Aircraft Occupants Had To Move *(feet)*: 15

c. Toxicity: Was There Evidence of Toxic Products?
☐ Yes ☒ No

d. Distance To Nearest Available Military Firefighting Equipment
(1) Air Miles *(NM)*: 25 (2) Road Miles *(SM)*: 33

e. G-Force Activated Fire Extinguishing System Functioned As Designed
☒ Yes ☐ No ☐ NA

10. REMARKS *(Use additional sheet if required)*

11. CASE NO.	a. Date *(YYMMDD)*	b. Time	c. Acft Serial No.	12. OTHER ARCFT SERIAL NO.
	931001	1000	9212345	

DA FORM 2397-12-R, JUL 94

Figure 3-14. Sample of a completed DA Form 2397–12–R, Part XIII—Fire Data

Legend for Figure 3-14;
Completion instructions for DA Form 2397–12–R

1. Block 1. Check the appropriate box to indicate when the fire started.

2. Block 2. Enter a "1" in the appropriate block for the initial indication of fire. Enter "2, 3, etc.", for additional indications.

3. Block 3. Enter a "1" in the definite or suspected block to show the first location of the fire. When the principal location of the fire is different, enter a "2" to show the principal location. For example, ignition might occur at a broken fuel line to the engine. The fire might then spread to a ruptured fuel cell, causing it to become the principal location of the fire.

4. Block 4. Check the appropriate box to show the ignition source. If a definite source is not known, investigators are urged to indicate a suspected source. In all cases where a suspected source is indicated, explain in block 10.

5. Block 5. Check the material(s) that were the principal source of the fire.

6. Block 6. Check the appropriate box(es) to report on the adequacy of ground and aircraft fire extinguishing systems. Ground extinguisher systems include fire trucks, ramp extinguisher, etc. Aircraft fire extinguishing systems include those that are integrally installed (INST) in the aircraft; e.g., engine fire extinguishing systems; e.g., 5–lb portable bottle (PORT). Explain in block 10 all malfunctions and failures of the extinguishers/systems. Include nomenclature, NSN, size of extinguisher, type of agent, reason for failure and EIR number.

7. Block 7. Check the appropriate box to indicate if a fire/smoke detection system was installed and its function. If "undetermined" is checked, explain in block 10.

8. Block 8. Enter effectiveness of the engine, fuel, and/or electrical shutoff system(s).

9. Block 9.

a. **Block 9a.** Check percentage of damage caused by fire. In cases where an inflight fire results in the crew ejecting from the aircraft, only the fire damage prior to impact should be recorded. The objective of this item is to distinguish between fire damage and impact damage.

b. **Block 9b.** The purpose of this item is to determine the occupant's exposure to fire during the emergency evacuation. Complete the items in all cases, even those in which the occupants were trapped or incapacitated and thus unable to escape. Since it is unlikely that the dimension of the fire will be uniform around the aircraft, select the avenue of greatest distance an occupant will have to traverse to escape.

c. **Block 9c.** In addition to consumption of available oxygen, aircraft fires generate toxic gases such as carbon monoxide, acrolein, phosgene, etc. These toxic gases may seriously affect aircraft occupants in two ways: severe contamination, irritation of the mucous membrane of the eyes and respiratory passages, and systemic absorption in sufficient quantity to produce varying degrees of incapacitation. If toxic products are suspected to have affected occupants, record on a DA Form 2397–9–R for the affected occupant.

d. **Block 9d.** Complete the item even though the equipment was not at the scene of the fire. The objective of this item is to determine the distribution of available firefighting equipment relative to the location of fire accidents.

e. **Block 9e.** If the impact–activated fire extinguishing system was installed on the accident aircraft, check the appropriate block to indicate its function. If not installed check "NA."

10. Block 10. Enter explanations or clarifications of other items on the form and continue remarks on letter–size paper.

11. Block 11. Enter the case number shown on DA Form 2397–1–R.

12. Block 12. Use only in cases involving more than one aircraft and make entry only on the form applying to the other aircraft; i.e., other than the one identified in block 11c.

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT
INDEX A
For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL CSOCS-309

1. MISSION, TYPE, DESIGN, AND SERIES	2. CASE NO.	a. Date *(YYMMDD)*	b. Time	c. Acft Serial No.
UH-60A		931001	1000	9212345

3. TAB	Information	Encl	Not Applic	See Remarks
1	Copy of Orders Appointing Investigating Board	X		
2	Weather Data	X		
3	Certificate of Damage/ECOD	X		
4	Diagrams and/or Photographs	X		
5	Copy of Deficiency Reports	X		
6	Special Technical Reports and Laboratory Analysis	X		
7	Weight and Balance *(DD Form 365-4)*	X		
8	Copy of Directives, Regulations, Etc.		X	
9	Medical Data *(Autopsy, Toxicology, AFIP, etc.)*	X		X
10	Flight Planning Data *(flight plan, mission briefing, PPC, risk assessment, etc.)*	X		
11	Copy of Army Aviator's Flight Record *(DA Form 2408-12)*	X		
12	Copy of Aircraft Inspection and Maintenance Record *(DA Form 2408-13)*	X		
13	Copy of Uncorrected Fault Record *(DA Form 2408-14)*	X		
14	Copy of Equipment Modification Record *(DA Form 2408-5)*		X	
15	Other *(Specify)*			
16	Other *(Specify)*			
17	Other *(Specify)*			
18	Other *(Specify)*			

4. REMARKS

Tab 9 Autopsy protocol not available on date of report due to delay in completing tissue analysis. Protocol to be forwarded direct to Cdr, USASC. Approximate forwarding date is 931215.

DA FORM 2397-13-R, JUL 94

Figure 3-15. Sample of a completed DA Form 2397–13–R, Index A

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT
INDEX B

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-309

1. MISSION, TYPE, DESIGN, AND SERIES	2. CASE NO.	a. Date (YYMMDD)	b. Time	c. Acft Serial No.
UH-60A		931001	1000	9212345

3. TAB	Title	DA Form No.	Encl	Not Appl	See Remarks
a.	Statement of Reviewing Officials	2397-R	X		X
b.	Summary of Accident	2397-1-R	X		
c.	Findings and Recommendations	2397-2-R	X		
d.	Accident Narrative	2397-3-R	X		
e.	Summary of Witness Interviews	2397-4-R	X		
f.	Wreckage Distribution Data	2397-5-R	X		
g.	In-Flight or Terrain Impact and Crash Damage Data	2397-6-R	X		
h.	Maintenance and Materiel Data	2397-7-R	X		
i.	Personal Data	2397-8-R	X		
j.	Injury Occupational Illness Data	2397-9-R	X		
k.	Personal Protection/Escape/Survival/Rescue Data	2397-10-R	X		
l.	Weather	2397-11-R	X		
m.	Fire Data	2397-12-R	X		

4. REMARKS

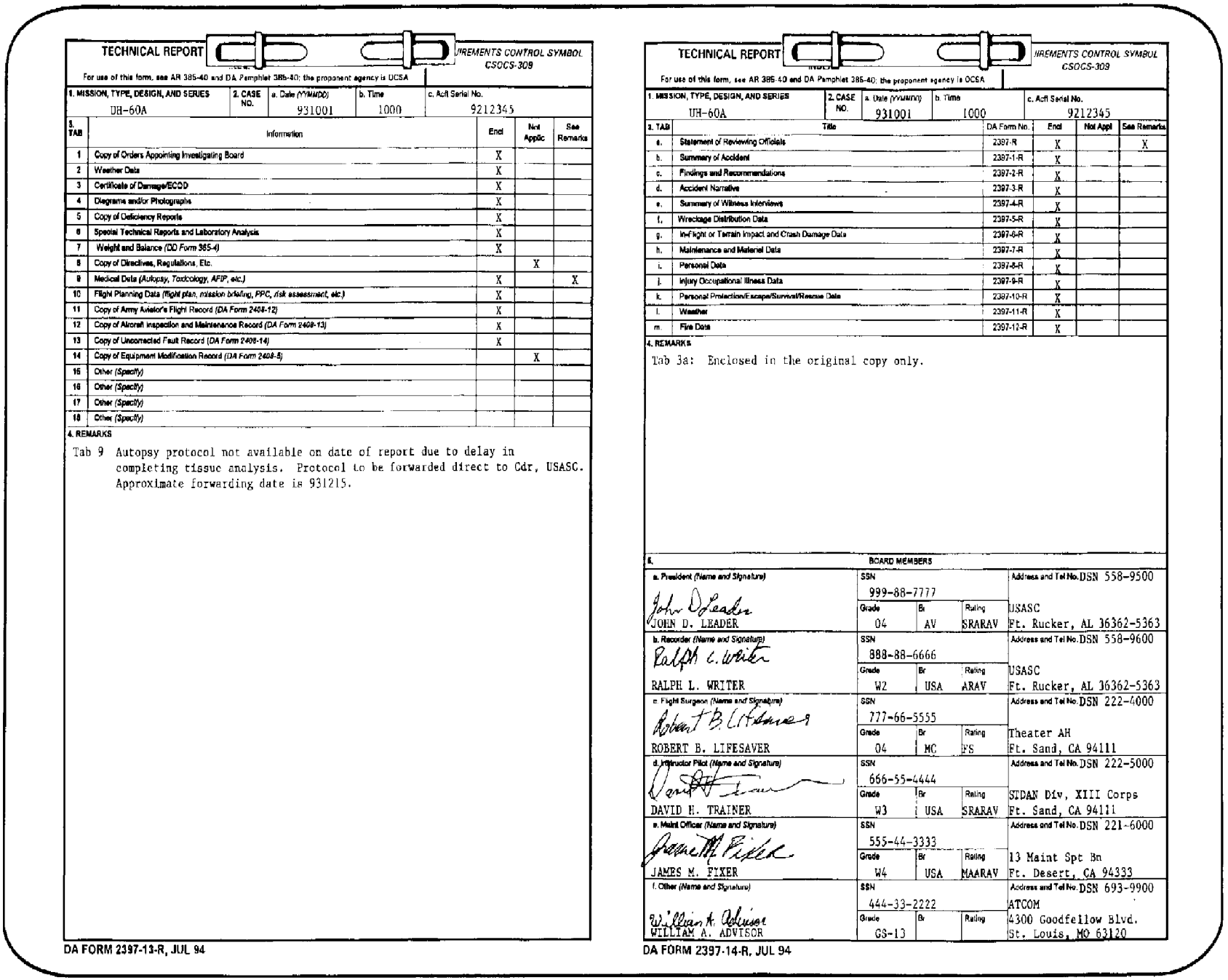
Tab 3a: Enclosed in the original copy only.

5. BOARD MEMBERS

	SSN	Grade	Br	Rating	Address and Tel No.
a. President (Name and Signature) John D Leader JOHN D. LEADER	999-88-7777	04	AV	SRARAV	DSN 558-9500 USASC Ft. Rucker, AL 36362-5363
b. Recorder (Name and Signature) Ralph C. Writer RALPH L. WRITER	888-88-6666	W2	USA	ARAV	DSN 558-9600 USASC Ft. Rucker, AL 36362-5363
c. Flight Surgeon (Name and Signature) Robert B. Lifesaver ROBERT B. LIFESAVER	777-66-5555	04	MC	FS	DSN 222-4000 Theater AH Ft. Sand, CA 94111
d. Instructor Pilot (Name and Signature) David H. Trainer DAVID H. TRAINER	666-55-4444	W3	USA	SRARAV	DSN 222-5000 STDAN Div, XIII Corps Ft. Sand, CA 94111
e. Maint Officer (Name and Signature) James M. Fixer JAMES M. FIXER	555-44-3333	W4	USA	MAARAV	DSN 221-6000 13 Maint Spt Bn Ft. Desert, CA 94333
f. Other (Name and Signature) William A. Advisor WILLIAM A. ADVISOR	444-33-2222	GS-13			DSN 693-9900 ATCOM 4300 Goodfellow Blvd. St. Louis, MO 63120

DA FORM 2397-14-R, JUL 94

Figure 3-16. Sample of a completed DA Form 2397–14–R, Index B



TECHNICAL REPORT — REQUIREMENTS CONTROL SYMBOL CSOCS-309

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

1. MISSION, TYPE, DESIGN, AND SERIES	2. CASE NO.	a. Date (YYMMDD)	b. Time	c. Acft Serial No.
UH-60A		931001	1000	9212345

3. TAB	Information	Encl	Not Applic	See Remarks
1	Copy of Orders Appointing Investigating Board	X		
2	Weather Data	X		
3	Certificate of Damage/ECOD	X		
4	Diagrams and/or Photographs	X		
5	Copy of Deficiency Reports	X		
6	Special Technical Reports and Laboratory Analysis	X		
7	Weight and Balance (DD Form 365-4)	X		
8	Copy of Directives, Regulations, Etc.		X	
9	Medical Data (Autopsy, Toxicology, AFIP, etc.)	X		X
10	Flight Planning Data (flight plan, mission briefing, FPC, risk assessment, etc.)	X		
11	Copy of Army Aviator's Flight Record (DA Form 2408-12)	X		
12	Copy of Aircraft Inspection and Maintenance Record (DA Form 2408-13)	X		
13	Copy of Uncorrected Fault Record (DA Form 2408-14)	X		
14	Copy of Equipment Modification Record (DA Form 2408-5)		X	
15	Other (Specify)			
16	Other (Specify)			
17	Other (Specify)			
18	Other (Specify)			

4. REMARKS

Tab 9 Autopsy protocol not available on date of report due to delay in completing tissue analysis. Protocol to be forwarded direct to Cdr, USASC. Approximate forwarding date is 931215.

DA FORM 2397-13-R, JUL 94

TECHNICAL REPORT — REQUIREMENTS CONTROL SYMBOL CSOCS-309

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

1. MISSION, TYPE, DESIGN, AND SERIES	2. CASE NO.	a. Date (YYMMDD)	b. Time	c. Acft Serial No.
UH-60A		931001	1000	9212345

2. TAB	Title	DA Form No.	Encl	Not Appl	See Remarks
a.	Statement of Reviewing Officials	2397-R	X		X
b.	Summary of Accident	2397-1-R	X		
c.	Findings and Recommendations	2397-2-R	X		
d.	Accident Narrative	2397-3-R	X		
e.	Summary of Witness Interviews	2397-4-R	X		
f.	Wreckage Distribution Data	2397-5-R	X		
g.	In-Flight or Terrain Impact and Crash Damage Data	2397-6-R	X		
h.	Maintenance and Materiel Data	2397-7-R	X		
i.	Personnel Data	2397-8-R	X		
j.	Injury Occupational Illness Data	2397-9-R	X		
k.	Personal Protection/Escape/Survival/Rescue Data	2397-10-R	X		
l.	Weather	2397-11-R	X		
m.	Fire Data	2397-12-R	X		

4. REMARKS

Tab 3a: Enclosed in the original copy only.

5. BOARD MEMBERS

	SSN	Grade	Br	Rating	Address and Tel No.
a. President (Name and Signature) JOHN D. LEADER	999-88-7777	04	AV	SRARAV	DSN 558-9500 USASC Ft. Rucker, AL 36362-5363
b. Recorder (Name and Signature) RALPH L. WRITER	888-88-6666	W2	USA	ARAV	DSN 558-9600 USASC Ft. Rucker, AL 36362-5363
c. Flight Surgeon (Name and Signature) ROBERT B. LIFESAVER	777-66-5555	04	MC	FS	DSN 222-4000 Theater AH Ft. Sand, CA 94111
d. Instructor Pilot (Name and Signature) DAVID H. TRAINER	666-55-4444	W3	USA	SRARAV	DSN 222-5000 SIDAN Div, XIII Corps Ft. Sand, CA 94111
e. Maint Officer (Name and Signature) JAMES M. FIXER	555-44-3333	W4	USA	MAARAV	DSN 221-6000 13 Maint Spt Bn Ft. Desert, CA 94333
f. Other (Name and Signature) WILLIAM A. ADVISOR	444-33-2222	GS-13			DSN 693-9900 ATCOM 4300 Goodfellow Blvd. St. Louis, MO 63120

DA FORM 2397-14-R, JUL 94

Figure 3-17. Sample aviation accident folder layout

ABBREVIATED AVIATION ACCIDENT REPORT *(AAAR)*

FOR ALL CLASS C, D, E, F, COMBAT A AND B, AND ALL AIRCRAFT GROUND

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL CSOCS-309

COMPLETE BLKS 1 - 18 FOR ALL ACDTS. NO FURTHER ENTRY IS REQUIRED FOR CLASS D, E, AND F ACDTS NOT INVOLVING HUMAN ERROR/INJURY.

1. DATE/CASE NO. OF ACCIDENT	a. (YYMMDD)	b. Time (Lcl)	c. Acft Ser No.	2.
	931027	0915	8912345	a. Classification ☐ A ☐ B ☒ C ☐ D ☐ E ☐ F b. Category ☒ Flight ☐ Flight Related ☐ Acft Ground

3. TYPE OF ACFT (MTDS)	4. PERIOD OF DAY	5. NO. ACFT INVOLVED	6. NEAREST MIL INSTALLATION
AH-64A	☐ Dawn ☒ Day ☐ Dusk ☐ Night	1	Fort Trainer, AL

7. ACCIDENT LOCATION	a. ☒ On-Post ☐ Off-Post	b. ☒ On Airfield ☐ Not on Airfield	c. City (Nearest to acdt site)	d. State	e. Country (If not USA)
			Level Sand	AL	

8. ORGANIZATION INVOLVED

a. Name of Unit	b. UIC (6 Digit Unit-Id Code)	C. Home Station	d. MACOM
A Co, 1-234 Avn Regt	WABCAO	Fort Trainer, AL	TRACOM

9. ORGANIZATION DEEMED ACCOUNTABLE *(If same as block 8 leave blank)*

a. Name of Unit	b. UIC (6 Digit Unit Id Code)	C. Home Station	d. MACOM
Materiel	WMATFA		HQDA

10. ESTIMATED ACCIDENT COST a. Acft Total Loss ☐ Yes ☐ No

b. Acft Damage (Excl man hr)	c. No. Man Hrs	d. Man Hr	e. Other Damage Mil	f. Civilian Damage	g. Injury	h. Total (This acft)	i. Total (All acft)
$ 26,250	25	$ 400	$	$	$	$ 26,250	$

11. GEN. DATA	a. Msn	(1) Type (Trg, Svc, etc.)	(2)	b. Flight Plan	c. Flight Data Recorder Installed	d. Night Vision Device/System in use
		T	☐ Single-ship ☒ Multi-ship	☐ NA ☒ VFR ☐ IFR	☐ Yes ☒ No	☐ Yes ☒ No If "Yes" specify type

e. Fire ☒ None ☐ Inflight ☐ Postcrash ☐ Other

f. Flammable Fluid Spillage *(If "Yes" for Class A, B, and C acdts,* YES ☒ NO ☐

g. Field Training Exercise *(FTX)* ☐ Yes ☒ No If "Yes" Name of FTX

12. FLIGHT DATA	Flight Duration	Phase of Operation (Enter max of 3 codes from fig 3-5 DA Pam 385-40 or specify phase (e.g., hover, NOE, etc.)	Altitude AGL	Airspeed KIAS	Aircraft Weight	Overgross for Conditions Yes	Overgross for Conditions No
a. At Emergency	Hours 0 Tenths 3	N X	100	100	15235		X
b. At Impact/Acdt or Termination	Hours 0 Tenths 4	K	0	60	15115		X

13. TYPE EVENTS *(Enter max 3 codes from fig 3-4 DA Pam 385-40 or specify type event which best describes the acdt/incdt, e.g., tree strike, generator failure, eng overspeed, hard landing, fuel exhaustion, dropped cargo, oil cooler bearing failure, etc.)*

80 85

14. ACCIDENT CAUSE FACTORS *(Enter D, S, or U to identify Definite, Suspected, or Undetermined causes)*

a. Human Error *(If D or S complete blks 21, 23, & 24)*

b. Materiel Failure/Malfunction *(Includes mfg/design induced failures) (If D or S complete blk 15)* D

c. Environmental *(If D or S complete blk 17)*

15. SUMMARY *(Enter summary of acdt sequence from onset of emergency through termination of flight. For Class D, E, and F, include the type of materiel failure and/or environmental factors.)*

While in formation flight at 100 KTS, 100 ft AGL, on a gunnery qualification mission, the AH-64 crew heard a loud pop, followed by a right yaw and loss of tail rotor control. The aircraft was flown to Trainer AAF, where a shallow approach was made to a power off roll on landing without further damage. Inspection revealed the damage was limited to the intermediate gear box, drive shaft, and cover.

16. COMPONENT AND PART FAILURE/MALFUNCTION DATA *(part that initiated failure/malfunction.)*

Identification	Major Component	Part
a. Nomenclature	Gear Box, Intermediate	Seal, Assembly
b. Type, Design, and Series		
c. Part Number	7-311330001-5	7-211330102-3
d. NSN	1615-01-232-0038	5330-01-274-4251
e. Manufacturer's Code	02731	02731
f. Part Serial No.	MH-2831R	
g. Cause Failure/ Malfunction	(1) ☒ Materiel (2) ☐ Maintenance (3) ☐ Design (4) ☒ Manufacture	FGCODE (USASC) TYPEFL CAUFL

17. ENVIRONMENTAL *(Chk conditions at time of acdt.)*

a. General *(1)* ☐ IMC *(2)* ☒ VMC *(3)* ☐ Unknown

b. Environmental Conditions

(1) Weather Conditions		(2) Other Conditions	
(a) Hail		(a) Animals	
(b) Sleet		(b) Fowl	
(c) Fog		(c) Surface	
(d) Drizzle		(d) Noise	
(e) Rain		(e) Chemicals	
(f) Snow		(f) Radiation	
(g) Lightning		(g) Glare	
(h) Thunderstorm		(h) FOD	
(i) Gusty Winds		(i) Temperature	
(j) Freezing Rain		(j) Vibration	
(k) Other		(k) Dust	

c. Acft Icing ☒ No ☐ Yes d. Turbulence ☒ No ☐ Yes

18. BOARD PRESIDENT/ASO/POC *(Name, Signature, and Date)*

PINDER, LARRY G. 10 NOV 93

SSN 012-34-5678

Grade CW5 Branch AV

Address and Tel No. *(DSN and Com)*

HHC, USAATC, Ft Trainer, AL
DSN 555-1234
COMM (205)222-1234

DA FORM 2397-AB-R, JUL 94

Figure 3-18. Sample of a completed DA Form 2397–AB–R, Abbreviated Aviation Accident Report (AAAR)

COMPLETE BLKS 19 - 28 FOR ALL CLASS C, COMBAT CLASS A, B, ACFT GROUND CLASS A, B, C, AND ALL CLASS ACDTs INVOLVING HUMAN ERROR/INJURY.

19. MOON ILLUMINATION DATA *(For night Class A, B, or C acdts. If blk a is "no", no other entry is required.)*

a. Moon Above Horizon	b. Moon Visible	c. Moon (Degrees Above Horizon)	d. Percent of Moon Illumination	e. Moon (Clock Position from Flight Path/Nose of Acft)
☐ ☐	☐Yes ☐No		%	

20. WIRE STRIKE DATA *(If "no" in blk a, no other entry is required)*

a. Wire Strike	b. WSPS Installed	c. WSPS Engaged Wire	d. WSPS Cut Wire	e. WSPS Functioned as Designed	f. Wires Struck
☐ Yes ☒ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	No. Dia (inches)

21. PERSONNEL DATA *(Complete for each crewmember with access to FR controls or other personnel injured or having a contributing role in the mishap; use additional forms as needed)*

a. Name (last, first, MI)	(1) SSN	(2) Grade	(3) Sex	(4) Duty	(5) SVC	(6) UIC (Assigned)	(7) Contributing Role
TEACHER, ROBERT G.	123-45-6789	W3	M	IP	A	WABCAO	☐D ☐S ☒N ☐U

(8) On Fit Controls	(9) Lab Test (Blood/Urine; for pos attach AFIP report)	(10) Activity (Last 24 Hrs)	(a) Hrs Slept	(b) Hrs Worked	(c) Hrs Flown	(11) (a) RL / (b) FAC	(12) Injury (If "yes" complete DA Form 2397-9-R)	(13) Tot Flt Hrs (acdt MTDS)
☐Yes ☒No	☐Pos ☒Neg		8	11	2.3	(a) RL ☒1 ☐2 ☐3 (b) FAC ☐1 ☒2 ☐3	☐Yes ☒No	492

b. Name (last, first, MI)	(1) SSN	(2) Grade	(3) Sex	(4) Duty	(5) SVC	(6) UIC (Assigned)	(7) Contributing Role
LEARNER, LAURA M.	987-65-4321	W1	F	PTR	A	WABCEO	☐D ☐S ☒N ☐U

(8) On Fit Controls	(9) Lab Test (Blood/Urine; for pos attach AFIP report)	(10) Activity (Last 24 Hrs)	(a) Hrs Slept	(b) Hrs Worked	(c) Hrs Flown	(11) (a) RL / (b) FAC	(12) Injury (If "yes" complete DA Form 2397-9-R)	(13) Tot Flt Hrs (acdt MTDS)
☒Yes ☐No	☐Pos ☒Neg		6	14	1.3	(a) RL ☐1 ☐2 ☒3 (b) FAC ☐1 ☐2 ☐3	☐Yes ☒No	14

c. Name (last, first, MI)	(1) SSN	(2) Grade	(3) Sex	(4) Duty	(5) SVC	(6) UIC (Assigned)	(7) Contributing Role
							☐D ☐S ☐N ☐U

(8) On Fit Controls	(9) Lab Test (Blood/Urine; for pos attach AFIP report)	(10) Activity (Last 24 Hrs)	(a) Hrs Slept	(b) Hrs Worked	(c) Hrs Flown	(11) (a) RL / (b) FAC	(12) Injury (If "yes" complete DA Form 2397-9-R)	(13) Tot Flt Hrs (acdt MTDS)
☐Yes ☐No	☐Pos ☐Neg					(a) RL ☐1 ☐2 ☐3 (b) FAC ☐1 ☐2 ☐3	☐Yes ☐No	

22. IMPACT/PROTECTIVE/ESCAPE/SURVIVAL/RESCUE DATA *(For Class A, B, and C acdts)*

a. Acft Occupiable Space Compromised (If "yes" DA Form 2397-9-R required)	b. Escape/Survival Difficulties (If "yes" DA Form 2397-10-R required for the individual)	c. Protective/Restraint Equip Functioned as designed (If "no" DA Form 2397-10-R required for the individual)
☐Yes ☒No	☐Yes ☒No	☒Yes ☐No

23. ACDT CAUSE FACTORS *(Blk 24 must support all cause factors checked; See DA Pam 385-40 for definition of cause factors)*

a. ☐Training Failure (Stds exist but not known or ways to achieve them not known)	b. ☐Standards Failure (Stds not clear, practical, or do not exist)	c. ☐Leader Failure (Stds are known but not enforced)	d. ☐Individual Failure (Stds known but not followed)	e. ☐Support Failure (Inadequate equip/facilities/svcs/no or type personnel)

24. FINDINGS AND RECOMMENDATIONS *(See instructions in DA Pam 385-40 for writing findings and recommendations. Use additional sheet if required)*

FINDING 1: (Present and Contributing/Materiel Failure). During formation flight, the intermediate gear box seal assembly (PN 7-211330102-3) failed, allowing the oil to leak from the gear box, and resulting in subseqjent gear box failure. The seal assembly failed because it was damaged (dented) as a result of improper seating during manufacturer installation.

RECOMMENDATION 1:

Unit and Higher Level Action: None.

DA Level Action: Program Executive Officer - Aviation, review the manufacturer seal assembly installation process and take action deemed appropriate to improve quality control procedures.

USAASC use only								
Duty	Role ☐D ☐S	Failure/error Code	SI 1	RM 1	RM 2	RM 3
Phase of OP	Task/part no.		SI 2	RM 1	RM 2	RM 3

25. LIST OF ATTACHMENTS *(CCAD, DA Forms 2397-4, 8, 9, etc.)*

DA Forms 2397-4 and 2397-6

26. COMMAND REVIEW *(Required for Class A and B combat and all Class C acdts. Use separate sheet for non-concurrence, additional findings, and recommendations.)*

Reviewer	Organization	Name (Typed/Printed)	Rank	Signature	Comments
a. Unit Commander	A Co, 1-234	LEADER, WILLIAM E.	MAJ	William E. Leader	☒ Concur ☐ Non-concur
b. Reviewing Official	USAATC	REVIEWER, MICHAEL W.	MG	Michael W. Reviewer	☒ Concur ☐ Non-concur
c. Approving Authority	TRACOM	APPROVER, GLEN D.	GEN	Glen D. Approver	☒ Approved ☐ Disapproved
d. DA Review	U S Army Safety Center	CONTROLLER, ROY A.	BG	Roy A. Controller	Approved for entry into ASMIS (YYMMDD) 14 NOV 93

REVERSE OF DA FORM 2397-AB-R, JUL 94

Page 2

Figure 3-18. Sample of a completed DA Form 2397–AB–R, Abbreviated Aviation Accident Report (AAAR)—Continued

Legend for Figure 3-18;
Completion instructions for DA Form 2397–AB–R

Note: Complete the entire form (both sides) for all aircraft ground Class A and B, combat Class A and B, and all Class C accidents. For Class D accidents, Class E and F incidents not involving human error or injury;*only* Blocks 1–18 are required. For Class D accidents or Class E and F incidents involving human error or injury, complete blocks 1 through 18, 21, 23, 24, and pertinent blocks dependent upon the circumstances/situation. The DA Form 2397–AB–R will be completed as follows:

1. Block 1. The case number consists of the year, month, and day (YYMMDD) of the accident, the local time of the accident, and the seven–digit aircraft serial number. Aircraft serial number must contain seven digits. In those cases where the aircraft serial number is less than seven digits, insert zeros (0) after the model year (first two digits) until seven digits are reflected.

2. Block 2. Check the boxes corresponding to the appropriate classification and category as defined in AR 385–40.

3. Block 3. Enter the mission, type, design, and series of the aircraft involved in the accident; e.g., UH–60L.

4. Block 4. Check the appropriate box. Dawn is that period of time between beginning of morning nautical twilight (BMNT) and official sunrise. Dusk is that period of time between official sunset and end of evening nautical twilight (EENT).

5. Block 5. Enter the number of aircraft involved in the accident and submit a separate DA Form 2397–AB–R for each aircraft included. Do not include inoperative aircraft. For additional AAAR forms, do not duplicate data included on the case aircraft form.

6. Block 6. Enter the name of the nearest military installation/facility from the accident site.

7. Block 7. Enter the name of the closest city and state to the accident site. Identify the country if outside the United States. Also check the appropriate boxes to indicate whether or not the accident occurred on or off post, or on or off an airfield. (See instructions for block 4, figure 3–2 for an explanation of an airfield).

8. Block 8. For the organization involved, enter the six digit UIC and abbreviated title of the lowest organization to which the aircraft is assigned or hand–receipted at the time of the accident.

9. Block 9. Enter the information pertaining to the organization most responsible/accountable for the accident. If the organization is the same as block 8, leave blank.

10. Block 10. Pertains to the estimated accident/incident damage cost. Do not include those items excluded from accident cost by AR 385–40. Enter in blocks 10b–10h, only the cost associated with the aircraft to which this form pertains. To complete this block:

a. **Block 10a.** If "Yes," enter the replacement cost per TB 43–0002–3 and do not fill in blocks 10c and 10d (manhour).

b. **Block 10b.** Enter the cost of aircraft and component damage, excluding manhour cost.

c. **Block 10c.** Enter only those manhours to required to repair aircraft damage.

d. **Block 10d.** Manhour cost pertains to aircraft damage only, based on current cost criteria specified in AR 385–40. Other manhour cost will be included in block 10e (Other Damage Military).

e. **Block 10e.** Enter all costs to other military property resulting from the accident (includes inoperative aircraft).

f. **Block 10f.** Enter the damage cost to civilian property.

g. **Block 10g.** Enter the injury cost of all personnel here. The cost can be obtained by adding the cost of block 19 of DA Forms 2397–9–R or injury criteria at table 2–1, AR 385–40.

h. **Block 10h.** Enter the total of blocks 10b through 10g.

i. **Block 10i.** Enter the total of blocks 10h (multiple aircraft accidents only).

11. Block 11. Complete the general data block as follows:

a. **Block 11a.** Enter the mission as shown on the DA Form 2408–12, or from AR 95–1. For maintenance operations with or without intent for flight, enter "S" for service. If none enter"NA." Also, check the appropriate box to indicated in the mission was a single or multi–ship operation.

b. **Block 11b.** Check the appropriate box which indicates the type flight plan on file at the time of the accident.

c. **Block 11c.** Check the appropriate box to indicate whether or not a flight data recorder was installed.

d. **Block 11d.** Check the appropriate box to indicate whether or not night vision device(s)/system (NVD) was in use at the time of the accident/incident. If "Yes," type NVD used in the space provided.

e. **Block 11e.** Check the appropriate box to indicate the phase of operation when the fire started. Identify in the remarks, the combustible material and the ignition source of the fire.

f. **Block 11f.** If "Yes," is checked for Class C and above accidents, complete a DA Form 2397–6–R and attach it to the report. For Class D, E, and F, explain the type and source of spillage in block 15.

g. **Block 11g.** Check the appropriate box to indicate whether or not the subject aircraft was participating in a field training exercise (FTX). If "Yes," enter the FTX name in the space provided.

12. Block 12. Enter the flight parameters at the times indicated. Flight parameters pertains to both flight and ground operations of the aircraft.

a. **Block 12a.** Enter the listed flight parameters at the onset of the emergency. Phase of operation codes are listed at Table 3–4.

b. **Block 12b.** Enter the flight parameters at the time of the first major impact/accident, except in those cases where an in–flight strike occurred, resulting in a second impact, in which case the second impact will be recorded here.

13. Block 13. Enter up to three event codes (Table 3–2 or Appendix F) that best categorize(s) the accident/incident. Enter the event code that best describes the accident/incident in the first space.

14. Block 14. Enter "D", "S", or "U" in the appropriate block to indicate whether or not human, materiel, or environment factors played a definite, suspected, or undetermined. Each indicated contributing factor will be substantiated by the findings (block 24) for Class C and above accidents and all classes involving human error, and/or by the summary (block 15), for Class D accidents, Class E and F incidents not involving human error. Also, the appropriate block pertaining to the factor, e.g., for definite or suspected materiel factors, block 16, will be completed on the failed part.

15. Block 15. Enter a concise summary of events from the initial onset of the emergency until the aircraft is at rest, to include injuries and F incidents not involving human error, specify the failure/effect and cause. Use a continuation sheet if necessary.

16. Block 16. This block must be completed if a materiel factor as indicated in block 14b. Enter the requested data for materiel failure/malfunction resulting from FWT, maintenance or manufacture error, and/or design deficiency (for maintenance error, over which the Army has control, block 21 must also be completed). Component data is required only on those involving the power and drive trains; e.g., engine, transmission, gearboxes, combining transmissions, etc.

17. Block 17. Check this block to reflect the environmental conditions present at the time and location of the accident/incident. This block must be completed for all reports. Environmental contributing factor in block 14c will be checked and narratively reported in the summary or findings, depending upon the classification and circumstances.

18. Block 18. For Class C and above accidents, enter the data for the investigation board president. For Class D accidents, Class E and F incidents, enter the safety officer/representative submitting the report.

Note: for Class D, E, and F reports not involving human error/injury, no further entries are required.

19. Block 19. Complete this block for night Class C and above accidents or night relevant dawn and dusk accidents involving human error, when NVD or environmental factors were present.

20. Block 20. Complete this block for all wire strikes.

21. Block 21. Complete this block for all Class A, B, and C accidents for crew members with access to the controls regardless of the accident cause factor. Also complete this block for all personnel who had a causative role or was injured as a result of the accident/incident (Class A–F). This block is not required for materiel failure Class D accidents, Class E and F incidents, where the only cause of the failure was fair wear and tear (FWT). If more than three personnel are involved, use additional forms as necessary. Use the instructions for Block 21a for completing Blocks 21b and 21c.

a. **Block 21a.** Enter the individual's last name, and middle initial.

b. **Block 21a(1).** Enter the individual's social security number.

c. **Block 21a(2).** Enter the individual's pay grade; e.g., 04, W3, GS–09, WG–10, etc. See Table 3–8.

d. **Block 21a(3).** Enter the Individual's sex.

e. **Block 21a(4).** Enter the duty position code as shown on DA Form2408–12 for the flight, or from the list at Table 3–5.

f. **Block 21a(5).** Enter the personnel service code of the individual from the list at Table 3–9.

g. **Block 21a(6).** Enter the UIC of the unit to which the individual is assigned at the time of the accident.

h. **Block 21a(7).** Check "D", "S", or "U" to indicate the individual's casual role in the accident.

i. **Block 21a(8).** Check the box to indicate if the individual was on the flight controls at the time of the accident or his previous control input had any influence on the accident.

j. **Block 21a(9).** Check if blood and urine samples were taken (required for Class C and above accidents). If the results are positive, attach the AFIP results and address in findings at Block 24 (authorized medication excluded).

k. **Block 21a(10)(a).** Enter the total number of hours this individual slept during the 24–hour period preceding the accident.

l. **Block 21a(10)(b).** Enter the total number of hours this individual worked in the 24 hours preceding the accident.

m. **Block 21a(10)(c).** Enter the total number of hours this individual flew in the 24 hours preceding the accident.

n. **Block 21a(11).** If the individual is a rated aviator, check the appropriate box to indicate his/her RL and FAC level.

o. **Block 21a(12).** Check the appropriate box to indicate if the individual was injured. If "Yes" is checked, a DA Form 2397–9–R is required to be submitted for each individual injured as a result of the accident. Accidents involving injury require a physician or physician's assistant to be a member/advisor of the board. Instructions for completing the DA Form 2397–9–R are contained in this pamphlet.

p. **Block 21a(13).** Enter the total number of flight hours this individual has accrued in the aircraft design and series.

22. Block 22. Block 22 pertains to Class C and above accidents.

a. **Block 22a.** Any deformation of occupiable space constitutes a compromise for the purpose of this report. If "Yes", is checked, a DA Form 2397–6–R (–6) is required to be submitted with the DA Form 2397–AB–R. Instructions for completing the DA Form 2397–6–R are contained in this pamphlet.

b. **Block 22b.** Check the appropriate box to indicate if postcrash escape/rescue/survival difficulties were a factor for this individual. If "Yes," submit a DA Form 2397–10–R (–10) for the individual(s). Instructions for completing the DA Form 2397–10–R are contained in this pamphlet.

c. **Block 22c.** Check the appropriate box to indicate if protective/restraint equipment failed to function as designed, was needed but not available, or was a contributing factor in the accident. If "Yes," submit a DA Form 2397–10–R (–10) for the individual(s). Instructions for completing the DA Form 2397–10–R are contained in figure 3–12.

23. Block 23. Check the block(s) that best describe the cause(s) of the accident and substantiate each box checked in the findings.

24. Block 24. Instructions for writing findings and recommendations are contained in this pamphlet.

25. Block 25. Enter the substantiating data submitted with the DA Form 2397–AB–R.

26. Block 26. For Class C and above accidents only.

Note: Supplemental DA Form 2397–AB–R. Follow up data, e.g., CCAD, DR (QDR), etc., teardown results are to be submitted as required. Complete only block 1 (case number) and those blocks for which the supplemental data applies.

Table 3–2
Event Codes associated with aircraft accidents

Code	Type Event
01	Precautionary landing (PL)
02	Forced landing (FL)
03	aborted takeoff
04	Human factor
05	Cargo
06	Personnel handling
07	External stores
08	Mulitple aircraft event
09	Misappropriated aircraft
10	Drone aircraft
11	Contractor aircraft accident
12	Aircraft ground accident
13	Laser–induced/related
14	Fratricide
15–19	(Reserved for future additions)
20	Refueling
21	Midair collision
22	Helocasting
23	Hard landing
25	Landing gear collapse/retraction
26	Undershoot
27	Overshoot or overrun
28	Ditching
29	Ground loop/swerve
30	Collision with ground/water
31	Aircraft collisions on the ground
32	Other collisions
33	Rotor overspeed
34	Fire and/or explosion on the ground
35	Fire and/or explosion in the air
36	Equipment loss or dropped object
37	In–flight breakup
38	Spin or stall
39	Abandoned aircraft
40	Flight–related accident
41	Instrument meteorological condition/IMC
42	Rappelling

Table 3–2
Event Codes associated with aircraft accidents—Continued

Code	Type Event
43	STABO
44	Overstress
45	FOD incident (engine only)
46	Rotor/prop wash
47	Engine overspeed/overtemp
48	Brownout
49	Bird strike
50	Tree strike
51	Wire strike
52	In–flight breakup (from mast bumping)
53	Missing aircraft
54	FOD (other than event 45)
55	Dynamic rollover
56	MOC
57	Weapons related
58	Lightning strike
59	Rescue operations
60	Object strike
61	Air–to–ground collision
62	Stump strike
63	Antenna strike
64	Engine overtorque/overload
65	Whiteout
66	Tiedown strike
67	Parachute
68	Mast bumping
69	Structural icing
70	Engine failure, power loss, or internal
72	Vertical fin strike
73	Spike knock
74	Seatbelt/Restraint harness strike
75	Blade flapping
76	Fuel exhaustion
77	Fuel starvation
78	Animal strike
79	Battery fire/overheat
80	Excessive yaw/spin
81	Tail boom strike
	Materiel Factor Event Codes
82	Airframe
83	Landing gear
84	Power train (except events 47 and 70)
85	Drive train (except event 71)
86	Rotor/propellers
87	Hydraulics system
88	Pneumatic system
89	Instruments
90	Warning system
91	Electrical system
92	Fuel system
93	Flight control
94	Utility/environmental control system
95	Avionics
96	Cargo handling equipment
97	Armament

Table 3–3
Ownership of Damaged Property

Code	Owner
A	Active Army
B	Army contractor
C	None Appropriated Fund
F	Foreign Government
J	Air Force (includes Reserve/NG components
K	Navy (includes Reserve components)
L	Marine (includes Reserve components)
M	Government, other (e.g., FAA, FBI, Customs, etc.)
N	Army National Guard

Table 3–3
Ownership of Damaged Property—Continued

Code	Owner
R	Army Reserve

Table 3–4
Phase of Operation

Code	Phase of Operations
A	Starting Engine/Run–up
B	Stationary (engines running)
C	Taxi
D	Takeoff
E	Hove IGE
F	Climb (after takeoff phase is completed and climb to altitude is established)
G	Cruise
H	Combat Maneuver (masking, unmasking, gun run, evasive action, etc.)
I	Descent (does not include approach)
J	Approach (prior to landing/termination)
K	Emergency Autorotation
L	Go–Around (the intended landing/termination is aborted)
M	Landing aircraft touchdown until forward motion stops or aircraft clears runway)
N	Low level (constant airspeed and altitude below 500 ft AGL)
O	Contour (varying altitude, while maintaining constant height above the contour of the earth's surface/obstacles)
P	NOE (varying airspeed and altitude, using the earth's contour/foliage for concealment)
Q	Hover OGE
R	Crash (crew has no control over the aircraft attitude)
S	Aerobatics
T	Termination w/Power (planned/attempted termination of an autorotation is to a hover)
U	Undetermined/Unknown
V	Power Recovery (the process of returning the aircraft to power; flight from an engine out configuration)
W	Training Autorotation
X	Formation
Y	Preflight activity (any activity prior to the flight that caused or contributed to the accident; e.g., mission planning, crew assignment, training, preflight, etc.
Z	Refueling (to identify the type refueling being conducted, use an additional code preceding the Z code; e.g., in–flight refueling should be coded as GZ).

Table 3–5
Duty Position Codes

Code	Duty Position
ABC	Avn Battalion Commander
ADC	App/Dep Controller
AMC	Air Mission Commander
AO	Aerial Observer
AOT	Aerial Observer Trainee
ART	Armament/Arms Technician
AUC	Aviation Unit Commander
AVT	Avionics Technician
CE	Crew Chief/Flight Engineer
CET	Combat–Equipped Troops/Jumpers
CP	Copilot
DCO	DA/DOD–Level Cdr/Supervisor
DEP	Design/Engineering Personnel
FCO	Flight Leader
FCT	Weather Personnel
FFT	Crash Rescue/Firefighters
FI	Flight Engineer Instructor
FSP	Flight Service Personnel
FTM	Fuel Team Member

Table 3–5
Duty Position Codes—Continued

Code	Duty Position
FTS	Fuel Team Supervisor
GC	Ground Unit Commander
GCA	Final Controller
GG	Ground Guide/"Follow Me"
GM	General Mechanic
GSY	Other Ground Support Personnel
IE	Intrument Flight Examiner
IP	Instructor Pilot
LCO	Local Commander/Supervisor
MCO	Major Commander/Supervisor
ME	Maintenance Test Flight Evaluator
MFP	Manufacturing/Rework Personnel
MS	Maintenance Supervisor
MO	Flight Surgeon/Medical Attendant
MP	Maintenance Test Pilot
OAY	Others Aboard Aircraft
OGY	Other Personnel Not Aboard Aircraft
OP	Operations Officer
OPN	Operations Dispatcher, etc.
OR	Gunner/Technical Observer/Aircraft Maintenance Personnel/Photographer
PAX	Passenger
PC	Pilot in Command
PF	Pathfinder
PI	Pilot
PPM	Powerplant Mechanic
PT	Pilot Trainee
PTM	Power Train Mechanic
PTO	Pilot Trainee Observer
PTR	Pilot Trainee Rated
SI	Stan Flight Engineer Instructor
SM	Structure/Airframe Mechanic
SP	Standardization Instructor Pilot
TI	Technical Inspector
TWC	Tower Personnel
Unk	Unknown
UT	Unit Trainer
XP	Experimental Test Pilot
ZR	Rate Passenger

Table 3–6
Accident Case Number

Digits	Information
1&2	Last 2 digits of the year in which the accident occurred; e.g., 94, 95, etc.
3&4	A 2–digit designator for the month in which the accident occurred; e.g., 01=Jan, 09=Sep, 11=Nov, etc.
5&6	A 2–digit designator for the day of the month in which the accident occurred; e.g., 01, 02, 03, etc.
7–10	A 4–digit designator for local time of day accident occurred; e.g., 0930, 2200, etc.
11–17	The serial number of the "case aircraft" involved.

Table 3–7
Accident Errors/Failures/Effects/System Inadequacy(ies)/ Recommendations

Code	Description
Errors	
P01	Scan
P02	Maintain/recover orientation
P03	Inflight planning
P04	Preflight planning
P05	Estimate distance/closure/control input
P06	Detect hazards/obstacles
P07	Diagnose or respond to an emergency

Table 3–7
Accident Errors/Failures/Effects/System Inadequacy(ies)/ Recommendations—Continued

Code	Description
P08	Coordination
P09	Failed to use or follow checklist
P10	Failed to follow maintenance manual (TM, SOP, TB, etc.), instructions while servicing acft/equip
P11	Failed to follow instructions (TM, TB, MWO, etc.) while repairing, installing, or adjusting equipment
P12	Inadequate/improper Inspection
P13	Failed to read/follow available SOPs, notices, ARs, general rules/principles, etc
P14	Inadequate tool/equip accountability
P15	Failed to secure materiel/equip/cargo
P16	Inadequate/improper LZ/termination point selection
P17	Improperly prepared LZ
Supervisor—Specific Mistakes/Errors	
P18	Improper mix/match/number of personnel
P19	Inadequate time allowed for pre–mission preparation
P20	Set/permitted inappropriate launch time for environmental conditions
P21	Permitted selection of inappropriate LZ for intended training or crew experience
P22	Failed to insure repairs/services/inspections/MWO are IAW appropriate TMs, TB, MWOs, etc.
P23	Failed to take appropriate/timely action to prevent or stop violation of procedures/unsafe acts
P24	Inadequate mission planning for risk–management, operational, and logistic decisions
P25	Failed to brief/provide information
P97	Insufficient information to determine mistake/error
Materiel Failure/Malfunction	
M01	Overheated/burned/melted
M02	Froze (temperature)
M03	Obstructed/pinched/clogged
M04	Vibrated
M05	Rubber/worn/frayed
M06	Corroded/rusted/pitted
M07	Overpressured/burst
M08	Pulled/stretched
M09	Twisted/torqued
M10	Compressed/hit/punctured
M11	Bent/warped
M12	Sheared/cut
M13	Decayed/decomposed
M14	Electric current action (short, arc, surge, etc.)
M97	Insufficient information reported to identify type of failure/ malfunction
Environmental Effects/Condition	
E01	Illumination (dark, glare, etc.)
E02	Precipitation (rain, fog, ice, snow, etc.)
E03	Contaminants (fumes, dust, chemicals, FOD, etc.)
E04	Noise
E05	Temperature/humidity
E06	Wind turbulence
E07	Vibration
E08	Acceleration/deceleration
E09	Radiation (sunlight, X–ray, LASER, etc.)
E10	Work surface/space (slippery floor, cluttered walkway, steep rough road, etc.)
E11	Air pressure (explosion, decompression, altitude effects, etc.)
E12	Electricity (lightning, arc, surge, short, shock, etc.)
E13	Animals (deer, birds, rodents, insects, etc.)
E97	Insufficient information reported to identify environmental conditions
System inadequacy(ies)/Root cause(s)/Readiness shortcomings	
01	Inadequate/improper supervision by "Higher command"
02	Inadequate/improper supervision by "Staff officer" e.g., operations, safety, supply, etc.
03	Inadequate/improper supervision by "Unit command"

Table 3–7
Accident Errors/Failures/Effects/System Inadequacy(ies)/ Recommendations—Continued

Code	Description
04	Inadequate/improper supervision by "Direct supervisor" e.g., instructor, squad leader, aircraft commander, etc.
05	Inadequate school training
06	Inadequate unit training
07	Inadequate experience
08	Habit interference
09	Inadequate written procedures for operation under normal, abnormal, or emergency conditions
10	Inadequate facilities or services
11	Inadequate/improper Equip/material design or equipment not provided
12	Insufficient type/number of personnel
13	Inadequate manufacture, assembly, packaging, or quality control
14	Inadequate maintenance (inspection, installation, troubleshooting, record keeping, etc.)
15	Fear/excitement (inadequate composure)
16	Overconfidence (in self, others, equipment)
17	Lack of confidence (in self, others, equipment)
18	Haste/Attitude (motivation)
19	Fatigue (self induced)
20	Effects of alcohol, drugs, or illness
21	Environmental conditions
97	Insufficient information reported to identify inadequacy/ shortcoming/cause
Recommendations/Remedial Measures	
01	Improve school training
02	Improve unit training
03	Revise procedures for operation under normal, abnormal, or emergency conditions
04	Ensure personnel are ready to perform (training, experience, psychophysiological state, etc.)
05	Inform personnel of problems and remedies (meetings, publications, EIRs, etc.)
06	Positive command action (to encourage proper performance and discourage improper performance)
07	Provide personnel resources (number or qualifications) required for job
08	Redesign (or provide) equipment or material
09	Improve (or provide) facilities or services
10	Improve quality control
11	Perform studies to get solutions to system inadequacy(ies)

Table 3–8
Pay Grade Codes

Grade/Code	Description
01–10	Commissioned officer
W1–W5	Warrant officer
E1–E9	Enlisted service member
GS1–GS18 & GM13–GM18	DOD civilian employee
WG1–WG18 & WS13–WS18	Wage board employee
X–1	Foreign officer, all grades
X–2	Foreign enlisted, all grades
CAC	Civilian contractor employee
CIV	Non–DOD civilian
SAC	Service academy cadets
ROTC	ROTC students
OTH	Personnel other than above

Table 3–9
Personnel service codes

Code	Service
A	Active Army
B	Army civilian
C	Army contractor
D	NAF employee
E	Other US military personnel (includes members of other DOD components on full–time duty in active military service).
F	Reserve Officer Training Corps
G	Military dependent (family member of active duty personnel).
H	NG technician, DOD employee
I	NG inactive duty for training (UTA/MUTA)
J	NG annual training
K	NG active duty special work
L	NG active guard/reserve
M	NG active duty for training other than annual
N	Reserve inactive duty training
O	Reserve annual training
P	Reserve active duty training
Q	Reserve active Guard/Reserve
R	Foreign national direct hire
S	Foreign national indirect hire
T	Foreign national KATUSA
U	Foreign military attached USA
V	Public
W	Not Reported

Table 3–9
Personnel service codes—Continued

Code	Service

Table 3–10
Injury Terms and Codes

NFS=Not Further Specified

		Body Region		
A	00 Body in General			
B	00 Head, General			
	01 Head Less Face	16 Mouth	29 Maxilla	
	02 Brain	17 Nose	30 Nasal	
	03 Ears	18 Teeth	31 Lacrimal	
	04 Hair	19 Tongue	32 Palatine	
	05 Scalp	20 Gums	33 Zygoma/Malar	
	06 Skull	21 Chin	34 Temporal	
	07 Temple	22 Face, NFS	35 Parietal Area	
	08 Head Less Face	23 Frontal	36 Multiple Bonds (Face)	
	10 Face, General	24 Ethmoid	37 Multiple Bones (Calvarium)	
	11 Cheeks	25 Spheroid	38 Multiple Bones (Basilar)	
	12 Eyes	26 Vomer	39 Multiple Bones (Other)	
	13 Forehead	27 Occipital Area	40 Orbit	
	15 Lips	28 Mandible		
C	00 Neck, General			
	01 Espophagus	07 Vertebra C_2	13 Intervertebral Disk	
	02 Larynx	08 Vertebra C_3	14 Odontoid (Atlanto Multiple Axial)	
	03 Trachea	09 Vertebra C_4	15 Atlanto–occipital	
	04 Vertebra$_1$ Cervical	10 Vertebra C_5	16 Jugular Vein	
	05 Neck, FNS	11 Vertebra C_6	17 Carotid Artery	
	06 Vertebra$_2$	12 Vertebra C_7		
D	00 Trunk, General			
	10 Abdomen, General	43 Heart	64 Vertebra T_5	
	11 Colon	44 Lungs	65 Vertebra T_6	
	12 Gall Bladder	45 Mammary	66 Vertebra T_7	

Table 3–10
Injury Terms and Codes—Continued

NFS=Not Further Specified

13 Intestines, General	46 Ribs/Sides	67 Vertebra T_8
14 Kidney	47 Sternum	68 Vertebra T_9
15 Liver	48 Chest, NFS	69 Vertebra T_{10}
16 Pancreas	49 Aorta	70 Vertebra T_{11}
17 Spleen	50 Pelvis, General	71 Vertebra T_{12}
18 Stomach	51 Bladder	72 Vertebra, Multi–Lumbar
19 Abdomen, NFS	52 Buttocks	73 Vertebra L_1
20 Intestines (large)	53 Genitalia	74 Vertebra L_2
21 Intestines (small)	54 Hip	75 Vertebra L_3
30 Back, General	55 Rectum/Anus	76 Vertebra L_4
31 Scapula	59 Vertebra, Multi–Thoracic	77 Vertebra L_5
32 Spinal Cord, General	60 Vertebra T_1	78 Sacrum
33 Vertebra, Multiple	61 Vertebra T_2	79 Coccyx
34 Back, NFS	62 Vertebra T_3	80 Intervertebral Disc
40 Chest, General	63 Vertebra T_4	
41 Clavicle		81 Vena Cava
42 Diaphragm		

E 00 Upper Extremities, General

10 Upper Arm, General	20 Lower Arm, General	31 Finger(s)
11 Shoulder	21 Wrist	33 Thumb
12 Elbow	30 Hand, General	34 Hand, NFS

F 00 Lower Extremities, General

10 Leg Upper, General	21 Angle	32 Ball
11 Knee	22 Leg Lower, NFS	33 Heel
	30 Foot, General	34 Toes
20 Leg Lower, General	31 Arch	35 Foot, NFS

Y 99 Other

X 97 Not Reported

Z 98 Unknown

Body Aspect, Primary

01 Right	09 Medial/Mesial/Midline
02 Left	98 Unknown
03 Bilateral/Both	99 Other (Specify)

Body Aspect, Secondary

04 Central (internal organs, etc.)	08 Inferior/Caudal/Lower
05 Anterior/Ventral/Front	10 Medial/Mesial/Midline
06 Posterior/Dorsal/Back	11 Whole Body Region, NFS
07 Superior/Cranial/Upper	12 Whole Body Part, NFS
	98 Unknown
	99 Other (Specify)

Injury Types or Results

A Burns (Chemical)

00 Burns, General	03 Third Degree
01 First Degree	04 Fourth Degree
02 Second Degree	05 Burns, Chemical, NFS

Table 3–10
Injury Terms and Codes—Continued

NFS=Not Further Specified

B Burns (Thermal)

00 Burns, General	05 Burns, Thermal, NFS
01 1st Degree	06 1st & 2d Degree
02 2d Degree	07 1st & 3d Degree
03 3d Degree	08 2d & 3d Degree
04 4th Degree	09 3d & 4th Degree

C Dismemberments

00 Dismemberment's, General	02 Avulsion (Evisceration)
01 Amputation	03 Decapitation

D Environmental Exposure

01 Decompression/Bends	06 Immersion Foot
02 Frostbite	07 Noise Injury
03 Heat Exhaustion	08 Radiation (Other than Burns)
04 Heatstroke	09 Exposure, NFS
05 Hypothermia	

E Environmental: Intake

01 Asphyxiation	02 Hypoxia
	04 Aspiration (Suffocation)
03 Ingestion	05 Inhalation

F Fractures

00 Fractures, General	08 Transverse
01 Chip/Wedge	09 Oblique
02 Compound (open)	10 Linear
03 Compression	11 Stellate
04 Crushed/Depressed	12 Comminuted
05 Incomplete (Greenstick)	13 Fracture–Dislocation
06 Simple (closed)	14 Blowout
07 Fracture, NFS	

G Stress Injuries

01 Dislocation
02 Sprain (wrenching of joint with stretching or tearing of ligaments)
03 Strain (stretched ligaments or muscles)
04 Stress Injury, NFS

H Wounds

01 Abrasions (Scraping)	06 Laceration/Cut
02 Bites	07 Puncture, Perforation, or Penetration
03 Blister	08 Transection (Cut Across)
04 Contusion (Bruise, Hematoma)	09 Wounds, NFS
05 Crushed	

I Miscellaneous

01 Collapsed Lung	07 Inflammation (Irritation)
02 Concussion	03 Multiple Fatal Injuries
03 Dermatitis	09 Internal Injury, NFS
04 Exhaustion (Physical Exhaustion Not Related to Heat or Cold)	10 Multiple Injuries, NFS
05 Foreign Object Retained	11 Flail Chest
06 Herniation/Rupture	96 Injury, NFS

Z Results

Table 3–10
Injury Terms and Codes—Continued

NFS=Not Further Specified

00 Results, NFS	52 Paralyzed
04 Amnesia	56 Pneumoconioses
08 Cardiac Arrest	60 Pneumothorax
10 Drowned	64 Poisoning
12 Edema	68 Trauma Shock (Emotional)
16 Embolism	69 Trauma Shock (Physical)
20 Emphysema	69 Shock Due to Trauma (Physical)
24 Exsanguination	72 Syncope (Fainting)
28 Hearing Loss (Acute)	76 Unconsciousness/Coma
32 Hemorrhage	90 Vision Loss
36 Hemo–pneumothorax	84 Repeated Trauma Disorders, NFS
40 Hemothorax	96 Occupational Disorders, NFS
44 Infection	97 Not Reported
48 Occlusion	98 Unknown
	99 Other (Specify)

Abbreviated Injury Scale (to be completed by a physician or physician's assistant)

Injury Mechanism (How Injury Occurred)

Action

01 Caught in/ under/between	05 Struck to
02 Experienced	06 Thrown from
03 Exposed to	97 Not reported
04 Struck against	98 Unknown
	99 Other (Specify)

Qualfier

01 Aircraft	15 Internal Object
02 Aircraft fire	16 Intruding Object
03 Armor	17 Irritating Fluids/Fumes
04 Ceiling	18 Litter/Litter support
05 Collective	19 Main rotor
06 Console	20 Multiple injury producing mechanism (MIPM)
07 Cyclic	
08 Door	21 Pedals
09 Excessive deceleration Forces	22 Restraint system
10 External object	23 Seat
11 Floor	24 Structure
12 Gunsight	26 Windshield/Window
13 Helmet	27 Night vision device(s)
14 Instrument panel	28 Tail Rotor
	29 Transmission
	97 Not reported
	98 Unknown
	99 Other (Specify)

Injury Cause Factors (Why Injury Occurred)

Subject

01 Aircraft	20 Monkey Harness
02 Armor	21 Qualifier
03 Body/Body Part	22 Restraint System
04 Canopy Removal System	23 Roof/Ceiling
05 Cargo	24 Seat
06 Design	25 Structure
07 Door	26 Transmission
08 Engine	27 Unauthorized Equipment
09 External Objects	28 Upper torso restraint system
10 Fuel Lines	29 Window
11 Fuel tanks/Cell	30 Windshield
12 Fuel vent line	31 Night Vision Device(s)
13 Helmet	32 Occupiable Space

Table 3–10
Injury Terms and Codes—Continued

NFS=Not Further Specified

14 Impact	33 Refueling Equipment
15 Instrument Panel	34 Lap Belt
16 Landing Gear	35 Inertial Reel
17 Litter	97 Not Reported
18 Internal Objects	98 Unknown/Unclassified
19 Main Rotor	99 Other (Specify)

Action

01 Absorbed	18 Ruptured
02 Allowed	19 Separated/Dislodged
03 Broke	20 Spilled
04 Buckled	21 Stretched
05 Caused	22 Trapped/Pinned
06 Collapsed	23 Used Improperly
07 Crushed	24 Not Restrained/Secured
08 Displaced	25 Allowed Excessive Motion
09 Exceeded	26 Injured outside aircraft
10 Flailed	27 Bottomed out
11 Ignited	28 Disintegrated
12 Injured	29 Penetrated Occupied Space
13 Located	30 Injured During Exit
14 Not provided	31 Failed to Fully Stroke
15 Not used	32 Failed to Attenuate For
16 Penetrated	97 Not Reported
17 Provided	98 Unknown
	99 Other (Specify)

Qualifier

01 During Exit	12 Longitudinal
02 Excessive Loading	13 Occupiable Space
03 Excessive Motion	14 Outside Aircraft
04 Excessively	15 Properly
05 Fuel	16 Vertical
06 Human and Design Limits	17 6 to 12 Inches
07 Improperly	18 Greater than 12 Inches
08 Inadequate Clearance	19 Less than 6 Inches
09 Insufficient Loads	97 Not Reported
10 Jagged Edges	98 Unknown
11 Lateral	99 Other (Specify)

Table 3–11
Equipment Information Codes

Retention	Component	Condition
Helmet		
10 retained	0 All	0 No damage
11 Dislodged from acceleration (no blow to helmet)	1 Chin Strap	1 Missing
12 Dislodged from blow	2 Nape Strap	2 Loose
	3 Snap Fastener	3 Torn
	4 Attachments	4 Burned
	5 Shell	5 Slipped/Stretched
	6 Strap Slide Fastener	6 Worn improperly/ Improperly fitted
	7 Pads	7 Fractured or Punctured
	8 Suspension	8 Scraped/System Scratched
	9 Crushable Liner	9 Compressed to half original thickness

Table 3–11
Equipment Information Codes—Continued

Retention	Component	Condition
Note: Helmet, retained, shell fractured. Enter Code"1057." If LASER visor used, so indicate and include date of issue in block 7.		
20 Retained	1 Facepiece	0 No Damage
21 Dislodged	2 Housing (cover)	1 Shattered
	3 Track	2 Cracked
	4 Screws	3 Punctured
	5 Adjusting knob	4 Separated
	6 All	5 Stripped
	9 Other	6 Burned
		7 Missing
		8 Scratched
		9 Other
Note: Visor, retained, facepiece cracked. Enter Code "2012."		
Glasses		
30 Retained	1 Lens(es)	0 No Damage
31 Dislodged	2 Frame(s)	1 Shattered
	3 Earpiece	2 Broken
	4 All	3 Bent
	9 Other	4 Separated
		5 Missing
		6 Burned
		7 Scratched
		9 Other
Note: Glasses, retained, lenses shattered. Enter Code "3011."		
Flight Suit/Flight Gloves/Flight Jacket/Boots/Other Clothing		
Type	**Configuration**	**Condition**
40 Cotton, fire retarded treated	0 All	0 No Damage
	1 Sleeves up	1 Torn
41 Cotton, non–fire retardant	2 Sleeves down	2 Burned
	3 Shirt out of pants or open	3 Melted
42 Wool	4 Pants out of or bloused over boots	4 Damaged, NFS
43 Leather	5 Short sleeves	5 Missing
44 Synthetics, non–fire retardant; e.g., Nylon	6 Worn properly	9 Other
45 Fire retardant synthetics; e.g., Nomex	7 Other	
46 Other	9 Other	
Note: Flight suit (cotton), non–fire retardant; sleeves rolled up, burned. Enter Code "4112." In the event crewmembers are wearing other than Nomex; i.e., Army green shirt/pants/blouse/shirt, etc., which causes a problem/condition, enter the item(s) of clothing in the blank space (line h "other clothing"), specify type, check the appropriate columns, and enter the four–digit information codes in the "information code column."		
Restraint Equipment Codes (Items I through M)		
Lap Belt/Shoulder Harness/Gunner Harness/Inertial Reel		
Component	**Condition**	**Location**
50 Webbing (Strap/belt)	1 Broke	1 At end fitting
51 Hardware fittings	2 Slipped	2 At anchor fitting
52 Lock	3 Stretched	3 At buckle
53 Cable	4 Torn/cut	4 At slide adjustment
54 Mount	5 Failed to properly lock	5 At guide
55 Lap Belt, General	6 Worn loosely	6 In automatic lock
56 Shoulder Harness, General	7 Bent	7 In manual lock
	8 Torn Free	8 Between attaching points
57 Inertial Reel,	9 Burned/Melted	9 Other General
	0 Missing	0 All locations
Note: Shoulder harness broke at guide. Enter Code"5615." Inertial reel lock failed to lock in automatic lock. Enter Code "5256."		
Seat/Litter		
Component	**Condition**	**Location**
60 Back Rest	1 Bent/Distorted	1 Front
61 Seat Pan	2 Broken	2 Rear
62 Support/Legs	3 Bottomed out	3 Right
63 Anchor fittings	4 Displaced	4 Left
64 Track	5 Torn/Ripped	5 Center
65 Brace	6 Torn free	6 Longitudinal
66 Pole or Frame	7 Stroked	7 Vertical
67 Canvas/Netting	8 Did not stroke	8 Lateral/Diagonal
68 Energy attenuator	9 Missing	9 All
69 Litter support	0 Burned/melted	0 Removed/not installed
70 Armor, General		
73 Seat, General		
74 Litter Carousel		
Note: The front leg(s) of a pilot's seat was/were torn free. Enter Code "6261." A longitudinal energy attenuator stroked on impact. Enter Code "6876." The litter carousel had been removed, by direction of the unit commander, to facilitate rapid loading of patients during combat conditions. Enter Code "7490."		

Table 3–12
Survival Equipment/Components

Survival Equipment/Components	
80	Survival vest
81	Survival radio
82	Pen flare
83	Signal flare
84	Strobe light
85	Mirror
86	Flashlight
87	Compass
88	Panel marker
89	Reflective tape
90	Night vision goggles/devices
91	Helmet sighting system
92	Night vision imaging system
93	NBC protective clothing
94	NBC protective mask
95	Life preserver
96	Life raft
97	Survival kit (see note 1)
98	First aid kit (see note 2)
99	Other (specify); e.g., parachute, oxygen, mask, body armor, etc.
	Survival Equipment Problem/Condition
01	Not available—supply problem
02	Not available—left behind
03	Damaged, unable
04	Damaged, unusable
05	Failed to operate
06	Operated partially
07	Difficulty locating
08	Beyond reach
09	Connection/closure problems
10	Release/disconnect problems
11	Inadvertent released/disconnect
12	Inadvertent actuation

Table 3–12
Survival Equipment/Components—Continued

Survival Equipment/Components	
13	Actuation problems
14	Actuated by other person
15	Improper use
16	Unfamiliar with use
17	Cold hampered use
18	Injury hampered use
19	Water hampered use
20	Other equipment interfered
21	Donning/removal problem
22	Poor fit
23	Leaked
24	Materiel deficiency
25	Design deficiency
26	Hangup/entanglement
27	Dragging (parachute only)
28	Nonstandard configuration
29	Aided in location/rescue
30	Not effective in location/rescue
31	Equipment produced injury
32	Failure/relay in using; compromised survival use
33	Maintenance/installation error
34	Problem experienced by others in actuation/release of equipment
35	Discarded
36	Lost
37	Deteriorated, not usable
38	Failed during use
39	Broken
40	Battery inoperative
41	Burned
42	Locally procured item
98	Other

Notes:

[1] Survival kit. Specify type, then match the component with the problem/condition with the appropriate code from the problem/condition code list. Example, the food packet in the cold climate survival kit had deteriorated and was unusable. Enter SURVIVAL KIT in an available open space (o or p), "type" would be cold climate, and the code 9737 should be entered in the "information codes" column.

[2] First aid kit. Specify type, then match the component with the problem/condition with the appropriate code from the problem/condition code list. Example: the provodine iodine leaked inside the tropical first aid kit. Enter FIRST AID KIT in an available open space, "type" would be entered as tropical, and the four–digit code 9823 would be entered in the"information codes" column.

Table 3–13
Method of Evacuation/Escape

Method of Escape	Information Codes
Did not egress; e.g., fatally injured	1
Exit unassisted	2
Assistance required	3
Blown/thrown out/fell out	4
Jumped prior to impact	5
Unknown if attempt was made	7
Other (specify in Remarks)	8
Egress method undetermined	9

Table 3–14
Location in aircraft

Aircraft Station	Codes
Cockpit	1
Engineer	2
Passenger	3
Gunner	4
Crew Chief	5

Table 3–14
Location in aircraft—Continued

Aircraft Station	Codes
Other (specify in Remarks)	8
Undetermined	9
Longitudinal Location	
Forward section	1
Center section	2
Aft section	3
Undetermined	9
Lateral Location	
Center	1
Left side	2
Right side	3
Undetermined	9
Direction Facing	
Forward	1
Aft	2
Sidefacing	3
Undetermined	9
Use of Seat	
Not in seat	1
In seat	2
Litter	3
Undetermined	9

Table 3–15
Exit Attempted

Exit Attempted	Codes
Normal exit	1
Emergency exit	2
Opening in aircraft wreckage	3
Cut through canopy	4
Canopy removal system	5
Cargo hatch	6
Other (specify in Remarks)	8
Undetermined	9
Fatal—None attempted	0

Table 3–16
Exit Used

Exit Used	Codes
Normal exit	1
Emergency exit	2
Opening in aircraft wreckage	3
Cut through canopy	4
Canopy removal system	5
Cargo hatch	6
Other (specify in Remarks)	8
Undetermined	9
Fatal—None used	0

Table 3–17
Aircraft Attitude at Time of Escape

Aircraft at Rest	Codes
Upright	A1
Inverted	A2
Nosed Over	A3
Lying on left side (More than 45° from upright)	A4
Lying on right side (More than 45° from upright)	A5
Tail low	A6

Table 3–17
Aircraft Attitude at Time of Escape—Continued

Aircraft at Rest	Codes
Other (specify in Remarks)	A8
Undetermined	A9
Fatal—Did not escape	A0
Aircraft in Motion	
Level	B1
Inverted	B2
Nose low	B3
Left bank	B4
Right bank	B5
Nose high	B6
Other (specify in Remarks)	B8
Undetermined	B9

Table 3–18
Cockpit/Cabin Condition

Condition	Codes
No damage	1
Survivable	2
Partially survivable	3
Nonsurvivable	4
Undetermined	9

Table 3–19
Escape Difficulties

Difficulties	Information Codes
Difficulty locating canopy jettison mechanism	01
Difficulty releasing canopy/door	02
Difficulty releasing restraints	03
Difficulty reaching exit due to obstructions	04
Difficulty reaching exit due to injuries	05
Difficulty reaching exit due to aircraft attitude	06
Difficulty reaching exit due to personal equipment hang–up	07
Canopy/door jettison problem	08
Canopy/door jettison failure (automatic)	09
Could not open canopy/door (mechanical failure)	10
Could not open canopy/door (jammed due to structural deformation)	11
Could not open canopy/door (Other, specify in Remarks)	12
Could have but did not open canopy/door	13
Exit inaccessible (out of reach)	14
Hampered by controls	15
Hampered by body armor	16
Hampered by seat armor	17
Hampered by seat	18
Hampered by airframe structure	19
Hampered by components of power train	20
Hampered by cargo or loose equipment	21
Hampered by armament system components	22
Hampered by clothing	23
Hampered by injuries	24
Personal equipment factor (Other than hang–up) (specify in Remarks)	25
Hampered by others aboard	26
Hampered by high temperature of exit surfaces	27
Parachute entanglement	28
Failure of lapbelt to open	29
Smoke, fumes	30
Fire	31
Spilled fluids	32
Confusion	33
Anthropometric problem	34
Unconscious	35

Table 3–19
Escape Difficulties—Continued

Difficulties	Information Codes
Darkness—no visual reference	36
Cold	37
In rushing water	38
Intruding object (tree, rock, aircraft structure, etc.) (specify in Remarks)	39
Lack of emergency evacuation during preflight briefing	40
Lack of in–flight warning	41
Briefing not followed	42
Panic	43
Disorientation	44
Dazed	45
Other (specify in Remarks)	98
Undetermined	99
None	00

Table 3–20
Survival Problems

Problems	Codes
Inadequate flotation gear	01
Inadequate cold weather gear	02
Lack of signaling equipment	03
Lack of other equipment (specify in Remarks)	04
Entanglement (parachute)	05
Dragging (parachute)	06
Parachute hardware problems	07
Entrapment in aircraft	08
Pulled down by sinking chute	09
Pulled down by body armor	10
Unfamiliar with procedure	11
Confused	12
Incapacitated by injury	13
Poor physical condition	14
Exposure (heat, cold, sunburn)	15
Fatigue	16
Weather	17
Topography	18
Darkness	19
Thrown from raft	20
Hampered by rotor downwash	21
Problem boarding rescue vehicle	22
Thirst	23
Hunger	24
Insects	25
Sharks	26
Unfamiliar with equipment	27
Dazed	28
Animals	29
No problems encountered	30
Other (specify in Remarks)	98

Table 3–21
Means Used to Locate Individual

Means	Codes
Survivor located rescuers	01
Accident observed	02
Accident site located w/o aid of signals or equipment	03
Individual located w/o aid of signals or equipment	04
Other aircraft orbiting scene to direct rescue personnel	05
Radio or radar vector or DF steer	06
Aircraft radio after mishap	07
Radar chaff	08

Table 3–21
Means Used to Locate Individual—Continued

Means	Codes
Sonar buoy	09
Walkie–talkie	10
Fire	11
Beacon (emergency locator transmitter)	12
Aircraft radio prior to mishap	13
Radio (survival type)	14
Telephone	15
Corner reflection	16
Reflective tapes	17
Mirror	18
Reflective surface other than code 16, 17, or 18 (specify in remarks)	19
Raft	20
Flight clothing	21
Parachute	22
Signal flare	23
Smoke flare	24
Aircraft lights	25
Pen gun flare	26
Tracers	27
Strobe light	28
Flashlight	29
Signal wand	30
Smoke	31
Dye marker	32
Whistle	33
Voice	34
Gunfire	35
Signals on surface	36
Not applicable	37
Other (specify in Remarks)	98

Table 3–22
Rescue Equipment Used

Item	Codes
Sling	01
Seat	02
Cargo net	03
Rope	04
Life ring	05
Basket	06
Axe	07
Saw	08
Raft	09
Webbing cutters	10
Cable	11
Grapnel	12
Boarding ladder	13
Knife	14
Makeshift carrier/support	15
First aid equipment	16
Forest penetrator seat	17
Helicopter platforms	18
Stretcher/litter	19
Cable cutters	20
Helicopter rescue boom	21
Not applicable	22
Other (specify in Remarks)	98

Table 3–23
Factors That Helped Rescue

Factors	Codes
Rescue personnel training	01
Training of person to be rescued	02
Aircraft emergency escape means	03

Table 3–23
Factors That Helped Rescue—Continued

Factors	Codes
Personal equipment	04
Accident plans	05
Availability of rescue equipment	06
Survivor's techniques	07
Suitability of rescue equipment	08
Coordination of rescue effectors	09
Survival training (specify in Remarks)	10
Emergency locator transmitter	11
Electronic tracking equipment	12
Not applicable	13
Other (specify in Remarks)	98

Table 3–24
Factors That Complicated Rescue

Factors	Codes
Failure of rescue vehicle (mechanical problems)	01
Inadequacy of rescue vehicle	02
Failure of rescue equipment	03
Inadequacy of rescue equipment	04
Inadequacy of rescue personnel	05
Inadequate medical equipment	06
Inadequate medical facilities	07
Vehicle operator factor (proof procedure)	08
Rescue crewman assist hesitancy	09
Fire	10
Entrapment in aircraft	11
Physical limitations of rescue personnel	12
Physical limitations of person rescued	13
Carelessness by rescue personnel	14
Inappropriate actions of person rescued	15
Rescue vehicle accident	16
Communication problems	17
Entanglement by deployed parachute	18
Topography	19
Interference from other vehicles	20
Victim pulled away by extreme forces	21
Weather	22
Darkness	23
Weight/drag problems due to parachute	24
Hampered by equipment of person rescued	25
Floating debris	26
Primary rescuer delayed by other rescuers	27
Hampered by helicopter downwash	28
Head wind	29
Poor visibility	30
High sea state	31
Mechanical problems	32
Other obstructions (specify in Remarks)	33
Rescuers lost	34
No problems	35
Vehicle operator not available	36
Vehicle not ready	37
Vehicle crew not available	38
Communication breakdown	39
Completing previously assigned duties	40
Lack of information about crash site	41
Poor radio reception/transmission	42
Telephone line busy	43
Poor radio discipline	44
Aircraft radio equip. inoperative	45
Poor radio procedures	46
Lack of emergency locator transmitter	47
Lack of electronic tracking equipment	48
Other (specify in Remarks)	98

Table 3–25
Individual's Physical Condition

Condition	Codes
Fully able to assist	1
Partially able to assist	2
Immobile or unconscious	3
Fatal	4

Chapter 4
Ground Accident Reporting

4–1. Introduction

AR 385–40, chapter 3 prescribes the classes of accidents that will be reported using the DA Form 285 and DA Form 285–AB–R. This chapter provides instruction for completing DA Form 285–AB–R. Table 4–1 summarizes these requirements. Additionally this chapter contains instructions for formulating findings, recommendations and a summary of the investigation (required for on duty Class A and B accidents only). It also identifies the types of substantiating data that should be appended to the DA Form 285 and DA Form 285–AB–R. The DA Form 285–AB–R may be transmitted to the U.S. Army Safety Center (USASC) electronically (E–Mail, etc.), by message, mail, or hand delivered. The composition and appointment of accident investigation boards, investigation, and accident reporting will be per AR 385–40. AR 385–40, also provides guidelines for category and classification of accidents to be reported on DA Forms 285 and DA Form 285–AB–R (see table 4–1).

4–2. DA Form 285, U.S. Army Accident Report

The DA Form 285 is a five–page, eight section, check–the–block, fill–in–the–blank format, accident report. This form is available through normal publications channels. The entire report is required for on–duty Class A and B accidents according to AR 385–40. Instructions are organized by sections and keyed to the block numbers of the form. (See fig 4–1.) The form may be completed by typing or legibly printing the data in the appropriate blocks. Items may be continued on a blank sheet of paper and attached to the report. For supplemental reports, section A; blocks 12 and 13 and Section B; and pertinent blocks to be changed/added will be completed and forwarded through the appropriate chain of command to USASC.

4–3. Findings and recommendations

Findings and recommendations will be completed for all Class A and B on duty accidents requiring a report according to AR 385–40. Formulate the findings and recommendations on letter–size paper. (See fig 4–1.)

a. Each finding must be fully substantiated by the analysis portion of the narrative of the investigation. As a minimum, the following elements of information will be addressed for each finding in the order stated.

(1) An explanation of when and where the error, materiel failure, or environmental factor occurred in the context of the accident sequence of events; e.g., "walking,""lifting," "while driving," "while employing," etc.

(2) Identification of the individual involved by duty position; or the name and part number (PN) or national stock number (NSN) of the part, component, or system that failed; or a description of the environmental factor, as appropriate.

(3) Identification of the activity/task or function the individual was performing and an explanation of how it was performed improperly. Refer to appendix B for mistake/error categories. The error could be one of commission or one of omission; e.g., an individual performed the wrong task, incorrectly performed the correct task, or failed to perform a required task or function. In the case of a materiel failure, identify the mode of failure (see appendix B for definitions and examples); e.g., corroded, burst, twisted, decayed, etc.

(4) Identification of the directive (i.e. SOP, FM, TM) or common practice governing the performance of the activity/task or function. In lieu of a written directive, the error may represent performance that is contrary to common practice.

(5) An explanation of the consequences of the mistake/error, materiel failure, or environmental condition. An error may directly result in property damage or injury. A materiel failure may have an immediate effect on equipment or its performance, or it may create circumstances that results in error, injury or make further damage inevitable.

(6) Identification of the reasons (root cause(s)) the human, materiel, environmental conditions caused or contributed to the accident. Refer to the list and examples of root cause(s)/system inadequacy(ies) at appendix B.

(7) A brief explanation of how each reason (root cause/system inadequacy) influenced the error, materiel failure, or environmental factor.

(8) Instructions for reporting findings that did not cause or contribute to the accident, but did adversely affect the severity of the accident results. The board should report those factors that contributed to the severity of injury or extent of damage. Personnel injuries attributable to defects in life support equipment, personnel protective clothing and equipment or crashworthiness design should also be summarized as findings in this category. Injuries sustained from failure to use provided equipment, i.e., seat belts, must be also be addressed. The findings and recommendations fitting this category will be separated from those that caused the accident and will be preceded by the following statement: "The finding(s) listed below did not directly contribute to the casual factors involved in this accident; however, it (they) did contribute to the (severity of injuries) or (accident damages)."

(9) Instructions for reporting findings that did not cause or contribute to the accident nor to the severity of injuries. The board should report errors, materiel failures, or other hazards that did not contribute to the accident but have a high potential for causing other accidents or adversely affecting the safety of training/combat operations if not corrected. Reporting these deficiencies will ensure they receive command attention throughout the chain of command to include Department of the Army–level action. The findings and recommendations fitting this category will be separated from those that caused the accident or those that did not cause the accident but contributed to the severity of injuries, will be preceded by the following statement: "The finding(s) listed below did not contribute to this accident. However, if left uncorrected, it (they) could adversely affect the safety of training/combat operations."

b. Each finding will be followed by recommendations having the best potential for correcting or eliminating the reasons (root cause(s)/readiness shortcoming(s)/system inadequacy(ies)) the error, materiel failure, or environmental factor that caused or contributed to the cause of the accident. Recommendations should not focus on punitive steps addressing an individual's failure in a particular case. To be effective at preventing accidents in the future, recommendations must be stated in broader terms. The board should not allow the recommendation to be overly influenced by existing budgetary, material, or personnel restrictions. In developing the recommendations, the board should view each recommendation in terms of its potential effectiveness; i.e., design improvement of a part that has a history of recurring failure is a better solution than recommending procedures to accommodate the deficiency. Each recommendation will be directed at the unit, command, or activity having proponency for, and which is best capable of, implementing the actions contained in the recommendation. The actions required at unit level, higher level, and Department of the Army levels of command will be addressed by each recommendation. If one or more of these three command levels had no action requirement, a negative report is required; e.g., "Department of the Army level actions: None." Unit level, "Higher level," and "Department of the Army" levels of action, as used in this context, respectively refer to the unit deemed

most responsible for the accident: the unit's chain of command, up to and including MACOM, and DA–level activities. In cases where a MACOM is the highest level proponent for a recommended action having Army–wide application, the MACOM will be listed in the "Department of the Army level" category.

4–4. Narrative of investigation

A narrative of the investigation will be completed for all on duty Class A and B accident reports required by AR 385–40. The narrative of the investigation will be prepared on letter size paper. The investigation board will report, in narrative form, the facts, conditions, and circumstances as established during the investigation and present this information in four sections (history of events, human factors, materiel factors, and analysis). The first three sections will contain only factual data. The analysis section is reserved for the board's documentation of its conclusions/opinions concerning the accident cause relationships. Paragraph 2–8, explains procedures for development of formal written analysis. Additional subheadings may be added as deemed necessary. It is important that the narrative address all of the chronological events and evidence that had a bearing on the cause of the accident and/or have the potential for adversely affecting the safety of future operations. For accidents in which the investigation board determines that human error, materiel failure/malfunction or environmental conditions were a factor, that portion of the narrative will be completed in its entirety, as specified in the instructions below. The history of events, personnel background, personnel management, meteorological, and analysis portions will be completed for all accidents. For the remaining subheadings which the investigation board determines were not a factor, enter after the subheading "Investigation revealed not a factor" and proceed to the next subheading. Opinions concerning the accident cause relationship of evidence cited throughout the narrative will be discussed only in the analysis section. Use letter–size paper for continuation sheets as required.

a. History of events.

(1) *Preaccident phase.* Report type of mission, its purpose, how the unit became tasked with the mission and who or what activity authorized it. Identify the individual(s) involved in the accident/injury, to include duty, unit assigned, and how they were selected for and informed of the mission. Describe the actions of the personnel involved in preparing for the mission to include planning, orders, briefings. Describe vehicle/equipment/vessel/structure involved, to include type, serial lot/numbers, inspections conducted and the dispatching process, etc. Describe facts which may indicate whether or not a sense of urgency was associated with the mission and if there were any delays prior to the onset of the mission/activity/departure.

(2) *Accident phase.* Indicate when the vehicle/personnel departed on the mission and continue until the accident occurred. If the mission involved more than one routine segment, requiring multiple activities, functions or stops before the accident occurred, concisely summarize these events until addressing the segment involving the accident. If the segment involving the accident contained an emergency, give a detailed description of the onset of the emergency to include where and when it occurred, symptoms, warnings, indications, instrument readings, etc. Also, describe actions/reactions of the personnel between the time of the emergency and the conclusion of accident.

(3) *The postaccident phase.* Briefly describe the condition of the equipment/vehicle/structure/vessel, to include whether or not the engine(s) was still operating, and the condition of the occupants immediately after the accident. Reserve details of damage to various equipment/vehicle/structure components for the materiel factors portion of the narrative. If a postaccident fire occurred, so indicate and explain how and when it was extinguished, if applicable. Describe how the accident site was located. Summarize rescue and first aid efforts, to include who notified rescue/medical/police of accident, response time, type of vehicle used in the evacuation, who administered first aid/CPR and their medical qualifications. Briefly summarize egress of occupants from vehicle/equipment, time of arrival at the medical facility, medical facility providing treatment and time of death if applicable. Reserve details of the egress, rescue and evacuation for rescue operations portion of the narrative.

b. Human factors. For accidents resulting from causes other than human factors, the human factors portion of the narrative may be sharply reduced to a negative response for the subheadings except for subheadings addressing personnel background information and personnel management.

(1) *Personnel background information.*

(a) This part of the narrative is extremely important in terms of providing a complete and informative profile of the principal persons involved. The sources of information will include, but are not limited to, personnel, training records, friends, peers, subordinates, superiors, and the persons themselves. Background information should primarily address the training, experience, qualifications, and reputation of the individual upon arrival at the unit to which assigned at the time of the accident. Briefly summarize service background to include date of service entry, training, type of assignments, and qualifications acquired prior to joining current unit. Report on the primary personnel involved to include evidence of traffic violations and prior accident experience. If the latter applies, explain role in prior accident. Describe experience in mission/duty relative to the accident mission/duty, also describe if the individual received his/her qualifications by on–the–job training (OJT) or attending a school. Discuss only those pre–service activities/experiences which are accident related.

(b) The same scope of information is usually not necessary for personnel not directly involved, but if it is suspected or known that other personnel played a role in the accident, summarize their background, experience and qualifications. This part of the narrative can involve commanders, operations personnel, supply and weather personnel, maintenance personnel, and others, if applicable.

(2) *Personnel management.*

(a) Personnel management should primarily address how the individual was managed by the unit to which assigned at the time of the accident. Review how the unit has managed each individual involved. Begin with date of assignment to current unit. Review experience, training and qualifications upon assignment and report how individual was tasked, trained, and otherwise managed up to the date of the accident. Describe how the unit prepared the individual with qualifications and readiness to perform the mission. Indicate whether or not the individual was qualified to perform the mission involved in the accident. Explain irregularities in the individual's training folder. Also discuss whether the individual was medically qualified to perform the mission involved in the accident.

(b) Discuss additional duties and the percentage of time given them versus their primary duty. Report qualifications acquired since assignment to unit such as OJT, schooling, etc. Review the procedures involved in selecting the personnel involved for the mission. Describe timeliness of notification, compatibility of personnel for the mission, and their relative experience for the mission. Describe involved personnel in terms of their professional reputations in unit, opinions of peers, subordinates, and others who have worked with/for them, etc. Describe the individuals' sleep, work and dietary habits and use of alcohol and nicotine. Review unit sleep/rest policy. Report whether or not a sleep/rest policy was in effect, being monitored and complied with. If postaccident evaluations were administered, summarize results. Highlight weaknesses in proficiency if appropriate, especially the performance of tasks duplicating those involved in the accident.

(c) Discuss if the individual was receiving medication before the accident. Report type, source, dosage, side effects, and possible effect on performance. Summarize the findings of the postaccident medical examination. If the individual sustained injuries, give a brief description of the injuries and how they occurred. If the individual sustained fatal injuries, briefly summarize autopsy report (if available), to include cause of death.

(3) *Vehicle/equipment suitability.* Describe suitability of the vehicle/equipment/structure/vessel involved to perform the mission. Consider primary purpose versus use at the time of the accident,

equipment design limitation as found in applicable operators manual, configurations, etc.

(4) *Communications.* Describe evidence relating to communications equipment (adequacy of visual and electronic signals, etc.) and the communication that occurred or failed to occur among the crew, between crew and passengers, and between crew and outside services; e.g., base station, operations, command and control, agency to agency, service to service, etc. Consider language difficulties, clarity of spoken words, static, interference, adequacy and precision of instruction, etc. Summarize tape recordings of communications between crew and other stations, if applicable.

(5) *Meteorological information.* Describe weather conditions that prevailed throughout the mission and conditions that existed at the accident site at the time of the accident. Include sky condition, visibility, winds, icing, turbulence, and any significant weather conditions. Consider weather observations made by trained weather observers and/or witnesses in the area. If weather was considered a contributory factor to the accident, describe the accuracy of the weather forecast. If the actual weather differed significantly from the forecast, include a discussion of the information that was available to the forecaster. For parachute accidents evaluate the winds aloft (at drop altitude) and surface winds. If the accident occurred at night, include details of moon illumination if it applied to the accident.

(6) *Support services.* Describe evidence that relates to the role of support services in the accident. Consider ground guides, road guards, traffic signs, fire stations, POL and dispatch procedures, etc.

(7) *Accident survivability.* Discuss crashworthiness/construction of the vehicle/equipment/structure in terms of crash/collapse sequence, impact conditions, kinematics, and crash impact forces. Include the performance of the restraint systems and the adequacy of the vehicle/equipment structure to maintain occupiable space and attenuate crash forces. Explain occupant injury relationship to crashworthiness. Explain if injuries occurred during or after the crash/accident sequence. Also include the performance of personal protective/restraint and equipment; e.g., seat belt, visor, helmet, roll bar, clothing, etc. Discuss in terms of use and nonuse.

(8) *Rescue operations.* Discuss details of egress, survival and rescue investigations. Describe where individuals were located in vehicle/structure/equipment, how and where they exited. difficulties encountered, and position of vehicle/equipment at time of egress. Describe factors that may have enhanced or inhibited the success of the survival/rescue situation. Report when and how rescue personnel were notified and how long it took rescue personnel to respond to the initial notification, arrive at accident site, and evacuate the survivors. Explain problems associated with delays in rescue.

(9) *Special investigation.* Report results of any special investigations that were conducted because of the accident. If, for example, during the investigation, it is found that night vision devices played a role in the accident, the applicable agency/program manager should be notified and a determination made as to their involvement.

(10) *Witness interview.* Briefly indicate number of witnesses interviewed and identify duty position and experience. Summarize pertinent witness observations and indicate whether or not witnesses generally agreed concerning accident events. Describe major conflicts in the provided information. Resolution of inconsistencies in the information should be discussed in the analysis portion of the report. Opinions regarding witness credibility should also be reserved for the analysis section.

c. Materiel factors. Report results of materiel factors investigation in the appropriate subparagraphs. Those accidents that do not involve materiel failure/malfunctions may be abbreviated to include negative reports. Identify and discuss damage resulting from pre–accident materiel failure/malfunctions and omit damage that resulted from crash/impact forces exceeding design limits. References can be made to the wreckage distribution diagram, photographs, reports, records, etc. Include the following:

(1) *Vehicle/Equipment/Structure/Vessel worthiness.* Describe the worthiness of the vehicle/equipment/structure. Investigation should include, but not be limited to, maintenance records, historical records, interviews with maintenance personnel, operator preventive maintenance records, dispatch records, etc. Identify all deficiencies, or discrepancies found during the investigation that had a role in the accident, or may not have had a role but, if not corrected could impair safe operations. However, reserve discussion of the results of discrepancies/deficiencies for the analysis portion of the narrative. Discuss those technical publications which were not complied with, or were inadequate in any manner.

(2) *Systems.* Use subparagraphs to report evidence obtained in the examination of fuel, steering/control, hydraulic, electrical, frame, tire, weapon, suspension, and brake systems. Note all discrepancies and their effects on the operation of the vehicle and equipment.

(3) *Engine.* Report the evidence obtained during examination of the engine(s). Include indications of power at impact, if available.

(4) *Transmission.* Report condition and describe any faults noted.

(5) *Laboratory analysis.* Report the results of laboratory tests and analyses of components, parts submitted for teardown/special testing, and vehicle fluids.

(6) *Accident site information.* Describe the accident site, to include dimensions, lighting and marking, obstructions, type and condition of surface, or any other peculiarities found.

(7) *Fire.* Discuss the role of fire to include when it occurred, manner in which the fire was detected, ignition source, combustible material, location, propagation, and degree of success in extinguishing.

d. Analysis.

(1) The analysis paragraph summarizes the narrative and discusses the opinions and conclusions of the board and must conclusively show the cause and effect relationship of the evidence gathered during the accident investigation. The analysis will discuss the influence of command activity, or lack thereof, in the context of its role in the accident or the prevention of accidents. Subparagraph headings in the analysis may coincide with pertinent subparagraphs in the first three sections of the narrative, with the exception of command influence, which is reserved for the analysis paragraph only. As a minimum, the analysis part of the narrative will provide the following information:

(a) Identify the errors, materiel failures, or environmental factors involved in the accident in the context of the accident sequence of events. To accomplish this task, the board will find it useful to review the listings of mistake/errors, materiel failures/malfunctions, and environmental factors and the explanations, examples, and key words contained in appendix B.

(b) Discuss the results/effects of the errors/materiel failures/environmental factors.

(c) Identify the root cause(s)/readiness shortcoming(s) that caused or permitted the errors/materiel failures/environmental factors to occur. To fulfill this task, the board will find it useful to refer to the explanations, examples, and key words contained in appendix B.

(d) Report preventable injuries in the context of the accident sequence of events and explain how they occurred.

(e) Identify the root cause(s)/readiness shortcoming(s) that caused or permitted injuries to occur.

(f) Discuss the command influence relative to cause factors and accident prevention.

(2) To fulfill these information requirements, the board should review all the evidence relating to the accident disclosed during the human, environment and materiel factors investigations. This may require readdressing specific paragraphs contained in the narrative and indicating the relationships between the facts disclosed and the errors/failures/environmental factors that occurred. From this review, the board should consider a logical development of the various circumstances and events that may have existed. This process of deductive reasoning should lead to the formulation of an explanation (or explanations) concerning the accident cause and preventable injuries (if and why they occurred). The explanation(s) should be discussed and tested against the evidence gathered during the investigation. If it is necessary to develop hypotheses, it is important for the board to state why a particular hypothesis was or was not supported by the evidence.

(3) The investigation board should initially outline and structure the correlation of cause–related errors/materiel failures/environmental factors and associated root cause(s)/readiness shortcoming(s). When the outline has been completed, the narrative rationale and conclusions should be composed using the following examples as a guide:

(a) Begin the paragraph by specifying the scope and conclusions of the investigation. In all cases, begin the paragraph with these words: "After analyzing the human, materiel, and environmental data collected during the investigation, the board concluded the accident was caused by" ... Complete the sentence by specifying the factor(s) (human, materiel, or environment) which caused the accident, e.g., "... human error–leader failure."

(b) Describe when or where the error/failure/injury/ environmental factor occurred in the context of the accident chronology of events; e.g., "before the mission,""while installing a hydraulic line," "during steering," "during the crash sequence," etc.

(c) Identify the duty position of the person who erred, became injured, or the name and part number or the NSN of the part, component or system that failed; e.g., "the mechanic"; "the brake line, part number 1–234–5678–9"; "the driver" ; etc.

(d) Identify the error in the context of a listed mistake/error category; e.g., "incorrectly diagnosed the emergency at hand," "failed to assign responsibilities,""failed to detect," etc. If a materiel failure is being reported, explain the type of failure; e.g., " overheated," "vibrated," "frayed," "decayed," etc. If an injury is being reported, explain if the individual "struck" or "was struck by" the injury–causing agent.

(e) Cite the directive or standard the mistake/error category failed to comply with; e.g., "contrary to standard and description for task 5007, TC 1–135"; etc. In the absence of written guidance/standards for a mistake/error, evaluate the task in terms of how other equally qualified and prudent personnel would perform the same task under similar circumstances. If the error represents performance that is unacceptable, it is contrary to common practice.

(f) Describe the specifics of the error; e.g., "he excessively torqued the nut, PN 12345" ; etc.

(g) Describe the consequences of the error, materiel failure, environmental factor, or the resulting injury.

(h) A complete failure statement could read as follows: "While driving an M109 (CUCV), a section of the right front brake line, PN 1–234–5678–9, eroded through. As a result, all brake fluid was lost and subsequent loss of effective breaking."

(4) Each statement of error, materiel failure, environmental factor or injury will be followed by statements identifying the root cause(s)/readiness shortcoming(s) that caused or permitted the error/failure/injury to occur or an environmental factor to become a cause. The root cause(s)/readiness shortcoming(s) statements are the most important part of the analysis. This is because the root cause(s)/readiness shortcoming(s) causing or permitting an error, failure, or injury to occur or an environmental factor to become a cause are more important from a remedial standpoint than the error, failure, injury, or environmental factor itself. Each root cause(s)/readiness shortcoming(s) statement will contain the following information:

(a) A transition phrase to tie the root cause(s)/readiness shortcoming(s) to the error/failure/injury; i.e., "the driver improperly responded to the emergency at hand because," "the brake line eroded to a point of failure because," "the driver sustained the back injury because," etc.

(b) Identification of the root cause(s)/readiness shortcoming(s) category(ies); e.g., "because of inadequate motivation/mood (attitude)," "inadequate supervision by the unit operations officer," "because of inadequate quality control on the part of the manufacturer,""because of inadequate seat design," etc.

(c) An explanation of how or why each root cause(s)/readiness shortcoming(s) caused or permitted the error/failure/injury/environmental factor.

(5) Once the preceding elements of information are reported for each error, failure, injury, or environmental factor in the manner stated, the resulting conclusions (findings) can stand on their own. The example of human error used in these instructions ties three root cause(s)/readiness shortcoming(s) to the error. There could be more or less root cause(s)/readiness shortcoming(s), depending upon the circumstances. The point to be made is that root cause(s)/readiness shortcoming(s) causing or permitting an error, failure, or environmental cause must be made visible before effective corrective actions can be recommended.

(6) The analysis part of the narrative does not have to be limited to explaining and concluding what caused or contributed to the accident or injuries. The analysis may also address present but noncontributing hazards if they could adversely affect the safety of operations. There are provisions for reporting non–cause–related hazards. They are contained in the instructions for completing the findings and recommendations.

4–5. DA Form 285–W, U.S. Army Accident Report Summary of Witness Interview

a. Instruction. DA Form 285–W, Summary of Witness Interview (fig 4–2), will be completed for all on duty Class A and B accidents. As a minimum, summaries of the interviews with the primary personnel involved/injured will be included. The form will also be used to summarize interviews and statements of commanders, supervisors, maintenance personnel, and others who are able to contribute pertinent information concerning the accident. If additional space is required, use letter–size paper for continuation sheets.

b. Procedural guidelines. The following procedural guidelines will be followed:

(1) All witnesses will be interviewed according to chapter 2. The investigator will emphasize to the witness that the sole purpose of the accident investigation is accident prevention. The witness should be further informed that the Army seeks to isolate the causes of the accident so it may take appropriate action to avoid similar accidents. If the witness is a civilian, the investigator will avoid using Army terms and acronyms.

(2) The board president or recorder will brief all witnesses concerning the interview. This will be done by reading to the witness the information on the back of the DA Form 285–W, contained in block 15. The purpose is to ensure that the witness understands the purpose of the interview, who will have access to the information, DOD restrictions on the use of the interview, and its public releasability. If a promise of confidentiality is to be offered (in a Limited Use investigation), the interviewer will read the section, "Promise of confidentiality offered." This includes the specific categories of witnesses (crewmembers, maintenance personnel) to whom confidentiality will be routinely offered, interviews under enhanced recall/hypnosis and other cases in which the interviewer feels it is necessary to offer a promise of confidentiality (to include situations where the interviewer feels that the witness is not providing complete or accurate information). This explains to the witness that the interview may be used within DOD only for accident prevention purposes. Beyond that, it explains that non–confidential interviews are publicly releasable and, to avoid that outcome, the interview must have been given under a promise of confidentiality (which is, available in Limited Use investigations). If a promise of confidentiality is not offered to the witness, the interviewer will read the section, "No promise of confidentiality offered." It explains that within the military, the interview may only be used for accident prevention purposes. It also explains the rules governing the public releasability of the interview.

(3) When a promise of confidentiality is offered in a Limited Use investigation, the witness will complete block 16, "Availability of Promise of Confidentiality for Limited Use Report of Investigation." The witness will initial the appropriate paragraph indicating his/her choice, requesting or declining confidentiality (note the exception for interviews under enhanced recall/hypnosis, which will automatically be deemed confidential and treated as such).

(4) If the witness is willing to be interviewed or make a statement, it will be summarized in block 13 of the DA Form 285–W.

(5) The promise of confidentiality will be entered in block 12 of the DA Form 285–W, and will be signed and dated by the interviewer. The promise is as follows: "The witness made this statement

under a promise of confidentiality." The summarized interview will then be set forth in block 13.

(6) There is no requirement to have an interview signed by the witness, and such should not be done. The interviewer does not have to sign either, except as addressed above. To approach a witness for a signature may give the indication that the statement will be used for purposes other than accident prevention. It is not necessary to record explanations discussed in paragraph 4–5 *b*(1) above on the DA Form 285–W.

(7) Witness statements should be summarized for inclusion in the report. The complete, verbatim account of all that was stated should not be included. A summarization is to be used, but it should not exclude any information that assists in explaining the circumstances of the accident.

4–6. Accident folder

An accident folder (see fig 4–7) is required for all Class A and B on duty accidents. When all required typing and photocopying have been completed and the necessary substantiating data have been collected, the recorder will assemble the information as follows:

a. Use folders to enclose the forms and substantiating data for each copy of each report.

b. Post substantiating data to the left side of the accident folder under its index and the other items as required such as Narrative, Findings and Recommendations, Accident Site Diagram, and so forth, on the right side under its index.

c. Tab and index each item on the left and right sides of the folder.

d. File completed DA Form 285–A–R, U.S. Army Accident Report (Index A), on top of substantiating data on the left side of the folder and file the completed DA Form 285–B–R (Index B), on top of the right side of the folder.

(1) *DA Form 285–A—R.* Place a number for all tabs and type a description of what the tab contains. As a minimum, tabs 1 through 5 will always be used.

(2) *DA Form 285–B–R.* Place a letter for all tabs and type a description of what the tab contains. As a minimum, tabs A through E will always be used. Type signature block of all board members to include SSN, grade, branch, unit address, and telephone number. Each board member will sign all copies of the accident report unless a minority report is submitted according to paragraph 2–1 *h*, of this pamphlet. Use a continuation sheet if there are more than six board members.

e. The front of the folder will be marked with the following information: Technical Report of Army Class (A)

> Ground Accident; Type Equipment and Serial No. (M109A2XXXXX) Date: (mm,dd,yy of accident). Location of accident: (DA Form 285, block 11). Unit: (DA Form 285, block 3).

4–7. DA Forms 285–A–R and 285–B–R

DA Form 285–A–R, and DA Form 285–B–R, U.S. Army Accident Report (figs 4–3 and 4–4), will be completed for all on duty Class A and B accidents requiring a report according to AR 385–40.

a. General. DA Form 285–A–R lists the information that will be appended to the technical report as substantiating data.

b. Requirements. Substantiating data at tab items 1 through 5 at DA Form 285–A–R and tabs A through E at DA Form 285–B–R, are required for all Class A and B on duty accidents. All other items which are necessary to explain or substantiate other parts of the report should be submitted, if appropriate. Additional instructions pertaining to applicability are contained in the paragraphs below.

c. Special considerations.

(1) *Legibility.* Original copies of substantiating data should not be appended to the report. (Leave originals with the unit for legal/ collateral investigations.) The copies provided, however, will be legible and suitable for additional reproduction.

(2) *Extracts.* Extracts or concise quotes of regulations, tasks, performance standards, specifications, and other directives are preferred in lieu of whole source documents to minimize bulk. When used, extracts will be annotated to include information which identified the source documents with date and latest change or update information.

(3) *Highlighting key words and phrases.* Substantiating data referred to by other parts of the report will have key words, phrases, or passages highlighted to complement the review of the accident report. Underlining or annotating margins are preferred in lieu of felt–tipped markers in that the fluid dispensed devices may obliterate the legibility of subsequent copies if and when reproduced.

d. Information items.

(1) *Serious incident report/casualty report.* A copy of the appropriate document should be included in the report.

(2) *Investigation board orders.* A copy of the original orders appointing the board and any amendments will also be appended.

(3) *Map of the accident site.* Always include a map of the site annotated to show where the accident occurred. A copy of the map sheet portion that includes the accident site annotated with an appropriate scale, distance, and map sheet name is acceptable.

(4) *Diagrams and photographs.* A diagram of the accident site should be appended to the report if it will assist in clarifying the accident sequence of events. The number and types of photographs, with captions, to be appended to the accident report will be determined by the accident circumstances. Additional guidance concerning photographic coverage of an accident is contained in paragraph 2–5 *e* of this pamphlet.

(5) *Certificate of damage/ECOD.* Submit completed ECOD(s) for vehicle/system/equipment damage. The ECOD(s) will include an itemized list of damaged components, number and cost of man–hours, and the total cost of repair. If the vehicle/system/equipment is damaged to the extent that the items are classified as a total loss, a statement to that effect, signed by the maintenance officer assigned to the accident board, will suffice in lieu of an ECOD. The statement will reflect the AMDF cost or applicable parts manual costs.

(6) *Product Quality Deficiency Report.* Include a copy of each deficiency report submitted as a result of the accident. All failed or suspected failed parts/systems must be reported on a Product Quality Deficiency Report.

(7) *Directives, regulations, etc.* Extracts of directives or manuals that establish the standards for either human or materiel issues will be included in the report. The extracts will be annotated to reflect the source document.

(8) *Special technical reports and laboratory analysis reports.* Append a copy of the results of all fluid (fuel, oil, hydraulic, and so forth) sample analyses, teardown analyses, or other material–related analyses conducted as a result of the accident.

(9) *Uncorrected Fault Record.* Append copies of the appropriate forms, if applicable to the accident vehicle/system/equipment if a material problem related to an uncorrected fault is involved.

(10) *DA Form 2408–5.* Append copies of DA Forms 2408–5 if applicable to accident vehicle/system/ equipment when necessary to substantiate maintenance errors, and omissions that had a bearing on the accident.

(11) *Weather reports.* If weather had no bearing on the outcome of the accident, a brief synopsis by the nearest weather service activity of the weather that existed during the accident will suffice in most cases. If weather contributed or is suspected to have contributed to the accident, the information to be provided will include, but not be limited to, the following:

(a) A signed narrative of the weather conditions prior to and during the accident provided by a weather forecaster, briefer, or observer.

(b) A copy of the weather forecast or observation from official files.

(12) *Medical data.* Copy of toxicology, AFIP, autopsy reports, etc. Autopsy protocol and pictures of deceased personnel will not accompany the report through channels. This information will be forwarded separately to USASC, ATTN: CSSC–ZM, for inclusion

in the file copy of the report. For further discussion on autopsies see chapter 2, paragraph 2–4.

(13) *Other*. Include copies of other substantiating data deemed appropriate by the investigation board or information that is critical to the report and is not available from other sources.

4–8. DA Form 285–O–R, U.S. Army Accident Report Statement of Reviewing Officials

DA Form 285–O–R (fig 4–5), will be submitted with the copy of the technical report forwarded through channels to the USASC. If additional space is required, use letter–size paper for continuation sheets.

4–9. Miscellaneous

A list may be beneficial to the local safety point of contact (POC) for actions required prior to the arrival/ appointment of the accident investigation board. The guidelines in appendix G can be used to prepare this list.

4–10. DA Form 285–AB–R, Abbreviated Ground Accident Report (AGAR)

a. Requirements for the submission of this report form are as defined in table 4–1 and AR 385–40.

b. The entire report is required for—

(1) *Peacetime.*

(a) Peacetime Class C and D accidents. Units have 30 days to submit the completed report.

(b) Peacetime off–duty class A and B accidents. Initial notification will be telephonic according to AR 385–40. Follow–up data will be provided on a completed DA Form 285–AB–R.

(2) *Combat.* As long as conditions permit, standard accident investigation and reporting procedures will be followed. When the senior tactical commander determines that the situation, conditions and/or time does not permit normal investigating and reporting, all accidents, Class A through D, will be reported on the DA Form 285–AB–R, as soon as time permits, not to exceed 30 days after the accident. Class A and B initial notification will be telephonic to USASC or its field representative in the theater of operations.

c. Complete the personnel information section (blocks 11 through 37) for each individual involved in the accident. "Involved" means any person who was injured or who took actions or made decisions that caused or contributed to the accident. If more than one person was involved, enter information on only one person on the initial form and use separate forms for each additional person, completing only the personnel section, and blocks 1 and 5 on additional forms. Witnesses and uninjured passengers are not considered involved unless their actions caused and/or contributed to the accident. Staple all forms together.

d. Type or legibly print all answers. Continue on blank sheets of paper if necessary, indicating the date of the accident, unit/activity accountable for the accident, and the blocks being continued.

Table 4–1
Accident notification and reporting requirements and suspense's [3]

	Peacetime			Combat [2]	
Accident Class	Telephonic Notification Worksheet	DA Form 285–AB–R	DA Form 285	Telephonic Notification Worksheet	DA Form 285–AB–R By Any Means Possible (Message, Electronic, FAX, Phone, Hand Carry, Mail)
On–Duty					
A	Immediately [1]	Not Required	IAI/CAI–90 days	Immediately [1]	As Time Permits (Not to Exceed 30 days)
B	Immediately [1]	Not Required	IAI/CAI–90 days	Immediately [1]	As Time Permits (Not to Exceed 30 days)
C	Not Required	Within 30 days	Not Required	Not Required	As Time Permits (Not to Exceed 30 days)
D	Not Required	Within 30 days	Not Required	Not Required	As Time Permits (Not to Exceed 30 days)
Off–Duty					
A	Immediately [1]	Within 30 days	Not Required	Immediately [1]	As Time Permits (Not to Exceed 30 days)
B	Immediately [1]	Within 30 days	Not Required	Immediately [1]	As Time Permits (Not to Exceed 30 days)
C	Not Required	Within 30 days	Not Required	Not Required	As Time Permits (Not to Exceed 30 days)
D	Not Required	Within 30 days	Not Required	Not Required	As Time Permits (Not to Exceed 30 days)

Notes:

[1] USASC must be notified IMMEDIATELY by phone at DSN 558–2660/2539/3410 or Commercial (205) 255–2660/2539/3410 or notify USASC Safety Rep forward (during combat).

[2] ONLY when the senior tactical commander determines that the situation, conditions, and/or time does not permit normal peacetime investigating and reporting.

[3] Army civilian injury only accidents should be reported on appropriate Department of Labor (DOL) forms IAW AR 385–40.

U.S. ARMY ACCIDENT REPORT

For use of this form, see AR 385-40; the proponent agency is OCSA

FOR USASC USE ONLY

Requirement Control Symbol CSOCS-308

SECTION A - ACCIDENT INFORMATION

1. CHECK ONE: [X] a. INITIAL [ ] b. CHANGE

2. UIC (Unit Identification Code) (6-Digit Code of Unit Having Accident): WABCCO

3a. UNIT NAME AND MILITARY ADDRESS: Co. C, 3d Bn 6th AR, Fort Water, WA 94118

3b. BRANCH (Armor, Infantry, etc.): Armor

4. DATE OF ACCIDENT: a. YR: 94; b. MO.: 01; c. DAY: 15

5. TIME OF ACCIDENT (Local Military Time): 1400

6. PERIOD OF DAY (Check one): [X] a. Day [ ] b. Night

7. ACCIDENT OCCURRED (Check one): [ ] a. On Post [X] b. Off Post

8. IF ON POST, NAME OF INSTALLATION/FACILITY:

9. ACCIDENT OCCURRED DURING (Check one): [ ] a. Combat [X] b. Non Combat

10. WERE EXPLOSIVES OR AMMUNITION INVOLVED OR PRESENT? [X] Yes (See instruction Book) [ ] No

11. EXACT LOCATION OF ACCIDENT (Detailed enough to locate site) (State type of location.): Washington Interstate 10, Mile Marker 101 Grid Coordinate FT 123321

SECTION B - PERSONNEL INFORMATION

12. NAME (Last, First, MI): DRIVER, CHARLES A.

13. SOCIAL SECURITY NUMBER (SSN): 987-65-4321

14. AGE: 23

15. SEX (Check): [X] a. Male [ ] b. Female

16. RANK OR GRADE: SPC E4

17. MOS OR JOB SERIES: 88M10

18. ADDRESS (Use Official Address for All Military or Government Personnel) (If different than block 3, add UIC.): Co C, 3d Bn, 6th AR, Fort Water, WA 94118

19. DUTY STATUS AT TIME OF ACCIDENT (Check one): [X] a. On Duty [ ] b. Off Duty

20. FLIGHT STATUS (Check one): [ ] a. Yes [X] b. No

21. CONTINUOUS DUTY (hrs.) (Without sleep): 8

22. HRS. SLEEP IN LAST 24: 8

23. DAYS LOST (Est. no. of days lost from work, not counting day of injury. Bed rest in quarters.)

24. DAYS HOSPITALIZED (Est. no. of days hospitalized receiving treatment, not for observation only.)

25. DAYS OF RESTRICTED WORK ACTIVITY (Est. number of days person cannot perform regular duties, light duty/profile.)

26. SEVERITY OF ILLNESS/INJURY (Check One)

- [X] a. **Fatal.**
- [ ] b. **Permanent Total Disability.** Person can never again do gainful work.
- [ ] c. **Permanent Partial Disability.** Person loses or can never again use a body part.
- [ ] d. **Days Away from Work.** Person misses one or more workdays; bed rest/on quarters.
- [ ] e. **Restricted Work Activity.** Person is temporarily unable to perform regular duties; light duty/profile.
- [ ] f. **First Aid Only.** Person has one-time treatment of minor injury. (No lost work days.)
- [ ] g. **No Injury.**

27. CLASSIFICATION AT TIME OF ACCIDENT (Check)

- [X] a. Active Army
- [ ] b. Army Civilian
- [ ] c. Army Contractor
- [ ] d. Nonappropriated Fund (NAF)
- [ ] e. Other U.S. Military
- [ ] f. ROTC
- [ ] g. Dependent
- [ ] h. NGB Tech
- [ ] i. NGB IDT
- [ ] j. NGB AT
- [ ] k. NGB ADSW
- [ ] l. NGB AGR
- [ ] m. NGB ADT
- [ ] n. USAR IDT
- [ ] o. USAR AT
- [ ] p. USAR ADT
- [ ] q. USAR FTM
- [ ] r. Foreign Nat. Direct Hire
- [ ] s. Foreign Nat. Indirect Hire
- [ ] t. Foreign Nat. KATUSA
- [ ] u. Foreign Mil. Attached to the U.S. ARMY
- [ ] v. Public
- [ ] w. Not reported

28. CAUSE OF INJURY/OCCUPATIONAL ILLNESS (Check the most serious)

- [X] a. Struck Against
- [ ] b. Struck By
- [ ] c. Fell from Elevation
- [ ] d. Fell from Same Level
- [ ] e. Caught In/ Under/ Between
- [ ] f. Rubbed/abraded
- [ ] g. Bodily Reaction
- [ ] h. Overexertion
- [ ] i. Exposure
- [ ] j. External Contact
- [ ] k. Ingested
- [ ] l. Inhaled

29. BODY PART(S) AFFECTED (Check primary) (No more than 3)

- 3 a. Body (General)
- 1 b. Head
- [ ] c. Forehead
- [ ] d. Eyes
- [ ] e. Nose
- 2 f. Jaw
- [ ] g. Neck
- [ ] h. Trunk
- [ ] i. Chest
- [ ] j. Heart
- [ ] k. Back
- [ ] l. Shoulder
- [ ] m. Arm
- [ ] n. Wrist
- [ ] o. Hand
- [ ] p. Fingers
- [ ] q. Leg
- [ ] r. Knee
- [ ] s. Ankle
- [ ] t. Foot
- [ ] u. Toes
- [ ] v. OTHER (Specify)

30. TYPE OF INJURY/ILLNESS (Check the most serious)

- [ ] a. Burns (Chemical)
- [ ] b. Burns (Thermal)
- [ ] c. Amputation
- [ ] d. Decompression Sickness
- [ ] e. Asphyxiation (Suffocation)
- 2 f. Fractures
- [ ] g. Dislocation
- 3 h. Abrasions
- 1 i. Concussion
- [ ] j. Sprain/Strain
- [ ] k. Cuts/Lacerations
- [ ] l. Contusion
- [ ] m. Puncture Wound
- [ ] n. Hernia, Rupture
- [ ] o. Frostbite
- [ ] p. Heat Stroke
- [ ] q. Heat Exhaustion
- [ ] r. Noise Injury/Illness

DA FORM 285, MAY 91

DA FORM 285, AUG 80 AND DA FORM 285-1, AUG 80 ARE OBSOLETE

Figure 4-1. Sample of a completed DA Form 285

SECTION B - PERSONNEL INFORMATION *(Continued)*

31. Person's action(s) at time of accident *(Check one and explain in Block 32.)*

	a. Soldiering		j. Test/Study/Experiments		s. Fabricating		aa. Hobbies
	b. Combat Soldiering		k. Educational		t. Handling Material/Passengers		bb. Passenger
	c. Physical Training		l. Information and Arts		u. Janitorial Housekeeping/ Grounds Keeping		cc. Human movement
	d. Weapons Firing		m. Food and Drug Inspection				dd. Horseplay
	e. Engineering or Construction		n. Laundry/Dry Cleaning Services		v. Food/Drink Preparations		ee. Bystanding/spectating
	f. Communications		o. Pest/Plant Control		w. Supervisory		ff. Personal Hygiene/Food/Drink Consumption/Sleeping
	g. Security/Law Enforcement	X	p. Operating Vehicle or Vessel		x. Office		gg. Parachuting *(See instructions)*
	h. Fire Fighting		q. Handling Animal		y. Counseling/Advisory		
	i. Patient Care *(People/Animals)*		r. Maintenance/Repair/Servicing		z. Sports		

32. SPECIFIC DESCRIPTION OF ACTIVITY/TASK

Driving an M925A2, 5-ton cargo truck on an interstate highway

33. ON FIELD EXERCISE *(Check one)*

XX a. Yes (If YES, specify name of exercise.)

☐ b. No

34. ACTIVITY PART OF TACTICAL TRAINING? *(Check one)*

☒ a. Yes

☐ b. No

35. Type of training facility being used *(Check one)*

	a. Garrison		d. NTC		g. Std. range facility/ live fire
	b. Local training area		e. JRTC		h. Other *(Specify)*
	c. Major training area		f. CMTC		

36. Type of training participating in at the time of accident *(Check/specify)*

	a. School *(Specify)*						
X	b. Unit →		(1) Platoon		(2) Crew	X	(3) Individual
	c. On-the-job training		d. Other *(Specify)*				

37. Last time individual received training prior to accident on activity specified in block 31? *(Check one)*

	a. 0 - 3 months		e. 1 - 2 years
	b. 3 - 6 months		f. More than 2 years
X	c. 6 - 9 months		g. Never
	d. 9 - 12 months		h. Not applicable

38. Required protective equipment

	CHECK APPROPRIATE BLOCK(S)	AVAILABLE? YES	AVAILABLE? NO	USED? YES	USED? NO	N/A
	a. Seat belt	X			X	
	b. Helmet					X
	c. Goggles/glasses					X
	d. Gloves					X
	e. Ear plugs	X			X	
	f. Other *(Specify)*					

39. INDIVIDUAL LICENSED TO OPERATE VEHICLE/EQUIPMENT? *(Check one)*

XX a. Yes ☐ b. No ☐ c. N/A

40. DID ALCOHOL CAUSE/CONTRIBUTE TO THIS ACCIDENT? *(Check one)*

☐ a. Yes ☒ b. No ☐ c. Unknown

41. If drugs caused/ contributed to this accident, check appropriate block.

	a. Prescription
	b. Illegal
	c. Over-the-counter
X	d. None

42. Were vision enhancement devices being used? *(Check appropriate block.)*

	a. Yes *(Specify type/model in c and d.)*		
X	b. No		
	c. TYPE	d. MODEL	

43. Standard/Reference covering activity/task

	a. Soldier's Manual *(Task No.)*		
	b. CTT *(Task No.)*		
X	c. AR/TM/FM *(Specify)* TM 9-2320-272-10		
	d. SOP		e. None *(Go to block 45.)*

44. WAS ACTIVITY/TASK PERFORMED IAW STANDARD/REFERENCE? *(Check one)*

XX a. Yes ☐ b. No *(If NO, complete blocks 46-47.)*

45. DID INDIVIDUAL MAKE A MISTAKE? *(Check one)*

XX a. Yes *(If YES, complete blocks 46-47.)* ☐ b. No

46. What was the mistake? How was the activity/task performed incorrectly? *(Explain below.)*

See Finding 2, Tab C.

47. Why was mistake made/activity performed incorrectly? *(Check the most important reason and specify in Block 63.)*

	a. Inadequate school training *(content/amount)*		f. In a hurry		k. Inadequate services		
	b. Inadequate unit training *(content/amount)*		g. Poor/bad attitude		l. Improper equipment design		
	c. Inadequate on-the-job training *(content/amount)*		h. Lack of rest/sleep		m. Inadequate written procedures *(AR, TM, SOP)*		
	d. Fear/ excitement		i. Effects of alcohol/drugs		n. Improper supervision		
X	e. Overconfident in own/others abilities		j. Inadequate facilities		o. Other *(Specify in narrative)*		

PAGE 2, DA FORM 285, JAN 92

Figure 4-1. Sample of a completed DA Form 285—Continued

SECTION B - PERSONNEL INFORMATION *(Continued)*

48. Time licensed on this vehicle *(Check one)*		49. Total AMV driving mileage *(Check one)*		50. Total time in unit *(Check one)*	
X	a. Less than one year		a. Less than 1,000 miles		a. Less than 6 months
	b. One to two years		b. 1,000 - 5,000 miles		b. 6 months - 1 year
	c. Over two years		c. 5,000 - 10,000 miles		c. Over one year
	d. Unlicensed		d. Over 10,000 miles		

51. WHICH ITEM FROM SECTION C APPLIES TO THE INDIVIDUAL NAMED IN BLOCK 12? *(This is needed in order to relate the person in block 12 to the equipment/vehicle below.)*

☒ Item A ☐ Item B ☐ Item C ☐ OTHER *(Specify)*

SECTION C - PROPERTY/MATERIAL INVOLVED *(Whether Damaged or Not)*

		ITEM A	ITEM B	ITEM C
52	Type of item	Truck, Cargo, 5-Ton	Ford, Truck, 1/2 Ton	Ctg, 105MM, APFSDS-T 1315-01-082-9856
53	Model number	M925A2	Ranger	C523; M774
54	Ownership *(DOD, DA, POV, Unit, Person)*	DA	POV	DA
55	Dollar cost of damage	$63,650.00	$12,300.00	$0
56	Rollover protection system installed?	☐ Yes ☒ No ☐ NA	☐ Yes ☒ No ☐ NA	☐ Yes ☐ No ☒ NA
57	Was this item being towed?	☐ Yes ☒ No ☐ NA	☐ Yes ☒ No ☐ NA	☐ Yes ☐ No ☒ NA
58	If towed, enter letter for item doing towing			
59	Types of collision codes *(Pick up to three from list below and enter in blocks.) (In sequence.)*	7 | 5 | 6	1	

Types of Collisions

1 - Going forward and collided with moving vehicle
2 - Going forward and collided with parked vehicle
3 - Collision while backing
4 - Collision with pedestrian
5 - Collision with object (other than vehicle/pedestrian
6 - Overturned
7 - Ran off the road
8 - Jackknifed
9 - Going forward and rear-ended moving vehicle
10 - Going forward and rear-ended parked vehicle
11 - Collision while turning
12 - Other *(Specify)*

60. **Component/Part that Failed/Malfunctioned** *(Complete this section if a materiel failure/malfunction caused/contributed to the accident.)*

	ITEM A	ITEM B	ITEM C
a. National Stock Number	2610-01-214-1344		
b. Part Number	152-705-961		
c. Describe Part	Tire, Radial 14 X 20		
d. Manufacturer's Identification Code	19207		
e. EIR/QDR Number	W35MDV94-0001		

61 How/Why Part Malfunctioned *(Select code from "How" list below and enter in first block; select code from "Why" list and enter in second block.)*	ITEM A HOW	ITEM A WHY	ITEM B HOW	ITEM B WHY	ITEM C HOW	ITEM C WHY
	7	3				

How Part Failed/Malfunctioned Codes

1 - Overheated/burned/melted
2 - Froze *(temperature)*
3 - Obstructed/pinched/clogged
4 - Vibrated
5 - Rubbed/worn/frayed
6 - Corroded/rusted/pitted
7 - Overpressured/burst
8 - Pulled stretched
9 - Twisted/torqued
10 - Compressed/hit/punctured
11 - Bent/warped
12 - Sheared/cut
13 - Decayed/decomposed
14 - Electric current action
15 - Unknown/Other
Blank - Not reported

Why Part Failed/Malfunctioned Codes

1 - Improper equipment design
2 - Inadequate maintenance
3 - Inadequate manufacture of equipment
4 - Inadequate written procedures *(AR, TM, SOP)*
5 - Improper supervision
6 - Unknown
7 - Other *(Specify in narrative)*

PAGE 3, DA FORM 285, JAN 92

Figure 4-1. Sample of a completed DA Form 285—Continued

SECTION D - ENVIRONMENTAL CONDITIONS INVOLVED

62. Environmental conditions *(Check environmental conditions present and indicate if condition caused/contributed to the accident.)*

PRESENT	CAUSED/ CONTRIBUTED	CONDITION	PRESENT	CAUSED/ CONTRIBUTED	CONDITION
X		a. Clear/dry, visibility unlimited			k. Wind gust/turbulence
		b. Bright, glare			l. Vibrate, shimmy, sway, shake
		c. Dark, dim			m. Radiation, laser, sunlight
		d. Fog, condensation, frost			n. Holes, rocky rough, rutted, uneven
		e. Mist, rain, sleet, hail			o. Inclined/steep
		f. Snow, ice			p. Slippery *(not due to precipitation)*
		g. Dust, fumes, gasses, smoke, vapors			q. Air pressure *(bends, decompression, altitude, hypoxia)*
		h. Noise, bang, static			r. Lightning, static electricity, ground
		i. Temperature/humidity *(cold, heat)*			s. OTHER *(Specify)*
		j. Storm, hurricane, tornado			

SECTION E - ACCIDENT DESCRIPTION/NARRATIVE *(From blocks 10, 47)*

63. GIVE THE SEQUENCE OF EVENTS THAT AMPLIFY/EXPLAIN WHAT HAPPENED, LEADING UP TO AND INCLUDING THE ACCIDENT *(Explain why accident happened.)*

An M925A2, 5-ton truck, 6X6, carrying 12, 105mm rounds, was travelling West on Interstate 10, when the left front tire blew out. The vehicle veered left, hit the median guard rail, and flipped over into the opposing traffic lane. The M925A2 struck a civilian's 1992 Ford Ranger pickup and came to rest on its left side. The driver of the M925A2 was ejected during the accident sequence and received fatal injuries.

For cause factors see Tab C and for narrative of investigation see Tab D.

64a. PRINTED/TYPED NAME OF PERSON COMPLETING THIS REPORT	64b. RANK	64c. TITLE	
RALPH L. WRITER	CW5	Board Recorder	
64d. SIGNATURE		64e. DATE OF SIGNATURE *(YY/MM/DD)*	64f. TELEPHONE NO
Ralph L. Writer		940215	DSN 558-3262

PAGE 4, DA FORM 285, JAN 92

Figure 4-1. Sample of a completed DA Form 285—Continued

SECTION F - CORRECTIVE ACTION AND COMMAND REVIEW

65. DESCRIBE THE ACTIONS TAKEN, PLANNED, OR RECOMMENDED TO ELIMINATE THE CAUSE(S) OF THIS ACCIDENT *(from unit level up to HQDA)*

See Recommendations, Tab C.

66a. PRINTED/TYPED NAME OF COMMANDER	66b. RANK
RICHARD F. FORMAN	Major
66c. SIGNATURE Richard F. Forman	**66d. DATE OF SIGNATURE** *(YYMMDD)* 940220
	66e. TELEPHONE NO. DSN 222-3456

	a. TYPED NAME	b. SIGNATURE	c. TITLE	d. RANK / DATE
67	THOMAS R. LEADER	Thomas R. Leader	Cdr, 3d Bn, 6th AR	LTC 24 Feb 94
68	JEFF C. REVIEWER	Jeff C. Reviewer	16th Armor Div	BG 5 MAR 94
69	BRIAN D. DIRECTOR	Brian D. Director	Cdr, CONUS Command	LTG 8 Mar 94

SECTION G - *SAFETY OFFICE USE ONLY*

70. LOCAL REPORT NO	71. MACOM
94-10	COCOM

72. Accident type *(Check choice)*

X	a. Army Motor Vehicle		h. Other Army Vehicle		o. Personal Injury - Other
	b. Army Combat Vehicle		i. Fire		p. Property Damage - Other
	c. Army Operated Vehicle		j. Chemical Agent		q. POV - On Official Business
	d. POV - Not on Official Business		k. Explosive		r. Space
	e. Marine Diving		l. Missile		s. Commercial Carrier/Transportation
	f. Marine Underway		m. Radiation		
	g. Marine Not Underway		n. Nuclear		

73. NAME OF SAFETY POINT OF CONTACT *(POC)*	74. PHONE NO. OF SAFETY OFFICE POC *(AUTOVON, Commercial, Etc.)*	75. DATE REPORT COMPLETED BY SAFETY OFFICE *(YYMMDD)*
ROGER A. SAFEMAN	DSN 222-3455	940218

SECTION H - SPECIAL INTEREST AND/OR SUPPLEMENTAL INFORMATION

76.	12 ea. C523 Lot # MA-91B003-009 NEW 156 lbs
77.	
78.	
79.	

PAGE 5, DA FORM 285, JAN 92

Figure 4-1. Sample of a completed DA Form 285—Continued

FINDINGS AND RECOMMENDATIONS M925A2: 940115

FINDING 1 (Present and Contributing: Materiel Failure):

The M925A2 was traveling on an interstate highway at approximately 70 mph, when the left front tire (NSN 2610-01-214-1344) failed (blew out). As a result, the vehicle veered sharply to the left, striking a guardrail. The cause of the tire failure was a defect (weak spot) in the tire wall which was not detected by the manufacturer's quality-control procedures.

RECOMMENDATION 1:

a. Unit-Level Action: None.

b. Higher-Level Action: None.

c. DA-Level Action: Commander, U.S. Army Materiel Command:

(1) Review historical information to determine if this failure was an anomaly or indicates a trend of failure for this tire.

(2) Coordinate with the manufacturer to evaluate the adequacy of the quality-control procedures used to detect _____.

FINDING 2 (Present and Contributing: Human Error - Individual Failure):

The driver of an M925A2, 5-ton truck was traveling west on an interstate highway at a speed (approximately 70 mph) in excess of posted and specified speed limits when a front tire failed. As a result, the driver could not maintain vehicle control and collided with a median guardrail and another vehicle, resulting in one fatality and extensive vehicle damage.

The driver willfully exceeded the posted and Army-specified speed limit because he was confident in his ability to control the vehicle at any speed.

RECOMMENDATION 2:

a. Unit-Level Action: Commander, Co C, 3d Bn, 6th Armor:

(1) Inform all personnel of the circumstances and consequences of this accident, reminding them of _____.

(2) Take positive command action to ensure _____.

b. Higher-Level Action: Commander, 6th Armor, emphasize to the chain of command and subordinate units the necessity to comply with regulations and _____.

c. Army-Level Action: Commander, U.S. Army Safety Center, publish the facts and circumstances surrounding this accident in Countermeasure, with special emphasis on lessons learned.

Figure 4-1. Sample of a completed DA Form 285—Continued

FINDINGS AND RECOMMENDATIONS (Cont'd) M925A2: 940115

THE FINDING LISTED BELOW DID NOT DIRECTLY CONTRIBUTE TO THE CAUSE FACTORS INVOLVED IN THIS ACCIDENT; HOWEVER, IT DID CONTRIBUTE TO THE SEVERITY OF THE INJURY.

FINDING 3 (Present and Contributing to the Severity of Injuries):

The driver of the M925A2, 5-ton truck was not wearing his seatbelt at the time of the accident. This failure to follow unit and Army requirements allowed the driver to be thrown against the vehicle interior and subsequently from the vehicle, contributing to increased injuries (fatality).

RECOMMENDATION 3:

a. Unit-Level Action: Commander, Co C, 3d Bn, 6th Armor, take positive command action to enforce policy to seatbelt use.

b. Higher-Level Action: None.

c. Army-Level Action: None.

THE FINDING LISTED BELOW DID NOT CONTRIBUTE TO THIS ACCIDENT; HOWEVER, IF LEFT UNCORRECTED, IT COULD HAVE AN ADVERSE EFFECT ON THE SAFETY OF FUTURE OPERATIONS.

FINDING 4 (Present but not Contributing):

The M925A2, 5-ton truck is not equipped with rollover protection for the occupants of the cab as required by AR 385-55.

RECOMMENDATION 4:

a. Unit-Level Action: None.

b. Higher-Level Action: None.

c. Army-Level Action: Commander, U.S. Army Materiel Command, take action to expedite the development of rollover protection standards for M925A2, truck crew compartments.

Figure 4-1. Sample of a completed DA Form 285—Continued

NARRATIVE OF INVESTIGATION M925A2: 940115

1. History of Events.

a. Preaccident Phase. The mission was a service mission in support of the 16th AD training exercise Eagle Spear. Co C, 3d Bn, 6th AR, Fort Water, WA, was tasked by OPORD 94-1 to provide a 6X6, M925A2, cargo truck and driver for a daily logistics run between the training area and Fort Water. SPC Charlie A. Driver, Co C, 3d Bn, 6th AR, was designated as the driver for the mission. The driver was notified three days prior to _____. There was sufficient time to _____. There was no undue sense of urgency or _____. Inspection and loading of the vehicle was _____.

b. Accident Phase. The M925A2 departed for the training area at 1100, 15 January 1994. The M925A2 arrived at _____. While the vehicle was being unloaded the driver _____. At 1315, the M925A2 departed on the return trip to Fort Water, empty except for 12 rounds of 105mm ammunition and _____. At 1400, while traveling west on I-10 at approximately 70 mph, near the Tepeetown, WA exit, the vehicle veered sharply to the left. It struck the median guardrail and flipped rear over front into the opposing traffic lane, ejecting the driver and colliding with the 1992 Ford Ranger truck. The M925A2 came to rest in the opposing traffic lane on its left side.

c. Postaccident Phase. The state troopers, military police, and rescue personnel were alerted by _____. Emergency vehicles arrived at _____, and the M925A2 driver was pronounced dead at the scene and transported to _____. The driver of the civilian vehicle received minor injuries and was transported to _____.

2. Human Factors Investigation.

a. Personnel Background Information. SPC Driver entered the U.S. Army National Guard in June 1990. He completed basic training on _____. He was awarded the 88M10 MOS on _____. He enlisted in the Regular Army on _____. He was respected and well liked by _____. He had no known social or financial problems. His sleep and dietary habits were _____. There was no evidence of an previous _____. He had accumulated over _____. He _____.

b. Personnel Management. SPC Driver was assigned to Co C, 3d Bn, 6th AR, on _____, in MOS 88M10. He was licensed to drive the M925A2 on 26 May 1993, and was assigned the primary duty of _____. He was physically qualified to _____. His driver training was conducted IAW _____. He was not under the influence of drugs or alcohol as evidenced by the blood and urine analysis results. He _____.

c. Vehicle Suitability. The M925A2 was suitable to perform the supply mission. It was designed to _____. The vehicle was _____.

d. Communications. Investigation revealed not a factor.

(Continue through support service paragraph)

3. Materiel Factors Investigation.

a. Vehicle Worthiness. A review of the vehicle records revealed no major equipment or systems discrepancies. The driver recorded no deficiencies as a

Figure 4-1. Sample of a completed DA Form 285—Continued

NARRATIVE OF INVESTIGATION (Cont'd) M925A2: 940115

result of the preventive maintenance checks and services conducted prior to the mission and considered the vehicle to be roadworthy.

b. Systems. Postaccident investigation revealed a defective spot in the tire wall. The vehicle was equipped with seven 14X20 Goodyear tires. All rims were _____. No other vehicle equipment/system discrepancy(ies) were noted.

c. Engine. Investigation revealed not a factor.

(Continue through the fire paragraph)

4. Analysis. After analyzing command, human, materiel, and environmental data collected during the investigation, the Accident Investigation Board concluded that the accident was caused by human error and materiel failure. Rationale for this conclusion was as follows:

a. Command Data. The command policies and procedures were evaluated and determined _____.

b. Environmental Factors. Environmental factors were evaluated and determined _____. Weather was clear and dry.

c. Materiel Factors.

(1) Examination of the vehicle and systems revealed that all were functioning as designed except a materiel defect in the left front tire wall. Laboratory testing revealed that the tire wall had a manufacturing defect, resulting in the tire failure.

(2) The board also concluded that the M925A2 was not equipped with rollover protection as required by AR 385-55. The crew compartment of the M925A2 was _____.

d. Human Factors.

(1) After evaluation of witness interviews, vehicle damage, and skid and impact marks, the board concluded that the M925A2 was traveling at approximately 70 mph, in violation of the 65 mph posted speed limit and the 55 mph speed limit imposed by the unit SOP. As a result, the driver was unable to maintain control of the vehicle when the left front tire failed. The driver exceeded the speed limit because _____.

(2) The board also concluded that the driver was not wearing a seatbelt as required by Army regulation and state law. As a result, the driver was thrown from the vehicle during the crash sequence and sustained fatal injuries. The driver was not wearing a seat belt because _____.

Figure 4-1. Sample of a completed DA Form 285—Continued

Legend for Figure 4-1;
Completion instructions for DA Form 285

Section A—Accident Information

1. Block 1. Check “initial” if this is the first report submitted on the accident. Check “change” if this report is a change or provides supplemental data for a previously submitted report of accident.

2. Block 2. Enter the six–digit unit identification code (UIC) for the specific organizational unit or activity responsible for the accident. Guidance on determining accountability for Army accidents is provided in AR 385–40, paragraph 1–6.

3. Block 3. For the unit/activity listed in block 2 provide the following data:

a. **Block 3a.** Name and full military address of unit.

b. **Block 3b.** The branch of the Army with which the unit is affiliated. Army branches are listed in table 4–2.

4. Block 4. Enter the year, month, and day of the accident in the appropriate blocks (e.g., 25 September 1993 would be shown as 930925).

5. Block 5. In local military time (24–hour clock), report the time the accident occurred. If unknown, estimate.

6. Block 6. Check the block that best describes when the accident occurred (day or night). Day is from first light to full night (dark). Night is from full night (dark) to first light.

7. Block 7. Check either on post or off post, depending on where the accident happened. (Note: On post includes all land under DOD control.)

8. Block 8. If the accident occurred on post, state the name of the post, government facility, or installation where it occurred (e.g., Fort Bragg, NC; Federal Center, Atlanta, GA).

9. Block 9. Check whether or not the accident occurred during combat. Combat should be checked if the accident occurred in a theater of hostile fire or enemy action, but not as a result of such fire/action. This includes direct preparation for combat, actual combat, or deployment from a combat theater immediately following combat.

10. Block 10. Check yes if explosives (C–4, TNT), ammunition, or pyrotechnics were present or involved. This does not include small arms ammunition, present only as cargo, that did not play a role in the accident. For example, if a vehicle is transporting artillery ammunition/explosives and is involved in an accident, "Yes" would be checked. If "Yes" is checked, the information specified in AR 385–40, paragraph 9–4, must be provided in Blocks 52, and 76 through 79. In addition, the following information will be provided:

a. Lot numbers, quantity, and net explosive weight (NEW) of all explosives and ammunition involved should be entered in blocks 76 and 77.

b. If the explosive/ammunition was exposed to significant environmental conditions, the environmental conditions should be checked in block 62, and an explanation of the conditions and their effect on the explosive/ammunition should be provided in block 63. Significant environmental conditions include the following: extremely high/low temperatures; electromagnetic environmental effects (E3) e.g, radiated energy (RFI) (such as being in close proximity to a radar site), electromagnetic energy (EMR), electrostatic energy or high voltage; water or high humidity; or prolonged exposure to direct sunlight.

11. Block 11. Give enough detail to describe the exact location of the accident. Provide the building number or direction and distance from closest landmark, grid coordinate, street or highway name/number, city or military installation, state and/or country. Also state the type of location, by choosing from the list below. Choose the type that best describes the location's primary function. For example, a person injured in the kitchen or a private resident would be in "family housing," not in a "dining facility." Types of accident locations are listed in Table 4–3.

Section B—Personnel Information. Complete this section for each individual involved (caused/contributed) and/or injured in the accident. If more than one person was involved, enter information on only one person on the initial form and use separate forms for each additional person, completing only sections A and B on these additional forms. Staple all forms together.

12. Block 12. Enter last name, first name, and middle initial of involved person.

13. Block 13. Enter the social security number (SSN) for the individual listed in block 12.

14. Block 14. Enter the age of the person listed in block 12.

15. Block 15. Check the appropriate block which reflects the sex of the individual listed in block 12.

16. Block 16. Enter the rank/pay grade of the individual listed in block 12 (e.g., SGT E5, CPT 03, GS–11, WG–8). Complete for all government personnel.

17. Block 17. Enter the full MOS/job series for the individual listed in block 12 (e.g., 54E20, 11B40, GS–301). For military MOS, give the full series number including the alphabetic character. For civilians, give the full job series number and include the pay plan (GS/WG). Do not give the job title.

18. Block 18. Provide individual's full official military address of assignment for all government personnel. If this address is not the same as that shown in block 3a, provide the unit UIC.

19. Block 19. Check the correct block to indicate the duty status of the person listed in block 12 (See glossary for definition of duty status). *(This determination applies for safety accident reporting purposes only, and has no relation to compensability or line–of–duty decisions.)*

20. Block 20. Check the appropriate block (for government personnel only) to indicate the current military flight status of the individual listed in block 12.

21. Block 21. State how many continuous hours this individual was on duty without sleep before the accident.

22. Block 22. Indicate how many hours of sleep (cumulative) this individual had in the last 24 hours before the accident.

Note: Injury data. Blocks 23 through 30. If this person suffers more than one injury, report only the most severe injury. Information entered in blocks 25 through 30 should be taken from official documents such as DD Form 689 (Individual Sick Slip) for military personnel; DOL Form CA–1 (Federal Employee's Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation); DOL Form CA–2 (Federal Employee's Notice of Occupational Disease and Claim for Compensation; DOL Form CA–16 (Authorization for Examination and/or Treatment) for DA civilian employees; and LS/BEC 202 for nonappropriated fund employees or information obtained through interviews with the injured person's doctor or hospital personnel.

25. Block 25. Enter the actual or estimated number of workdays this individual will be unable to perform all of his regular duties after going back to work (on light duty/profile).

26. Block 26. Check the block that indicates the severity of the injury to the person listed in block 12. If more than one applies, check the most severe.

27. Block 27. Select the classification (at the time of the accident) of the person listed in block 12 (for complete definitions consult glossary). Check only one block.

28. Block 28. For this individual's most severe injury, check the appropriate block(s) (no more than three) that indicate the cause of the injury/illness (the event that resulted in the injury/illness).

29. Block 29. Select the body part(s) most seriously injured (no

more than three) and number them in order of priority (the most serious first). Enter the number(s) in the appropriate blocks next to the body part(s) they apply to. Be as specific as possible. NOTE: Disregard instructions on the form to check the appropriate blocks.

30. Block 30. For each body part numbered in block 29, place a corresponding number in the block that indicates the type of injury incurred by that body part (no more than three of the most serious). Be as specific as possible. For example, the number 1 used to indicate item o, Hand, in block 29 is also used to indicate item f, Fractures, in block 30, showing that the most serious injury was to the hand, which was fractured. NOTE: Disregard instructions on the form to check the appropriate blocks.

31. Block 31. Check the block that best describes the individual's activity/task at the time of the accident (e.g., physical training). Check only one block. If the person was engaged in more than one activity at the time of the accident, check the one most relevant to the cause of the accident. For example, a unit commander was preparing an after–action report while a passenger in a HMMWV. The HMMWV ran off the road and turned over. The unit commander was injured. The most relevant activity for the unit commander would be "Passenger." If block 31gg, Parachuting, is checked, complete blocks 76 through 79, using instructions for section H of the form. (See appendix I for explanation of activities.)

32. Block 32. Provide a short but descriptive explanation of the item checked in block 31.

Note: For BLOCKS 35–35, the following definitions apply:

a. *Tactical training.* Training in a field environment that uses or develops combat, combat support, or combat service support skills.

b. *Field exercise and tactical training.* Begins when the individual reports to his primary duty location for movement to the field site and ends when he arrives back at the primary duty location from the field.

33. Block 33. Check yes if activity listed in blocks 31 and 32 was part of a field exercise. Indicate the name of the exercise (major and local field training exercise) if it has a name (e.g., Team Spirit, REFORGER, Gallant Eagle). Check no if activity was not part of a field exercise.

34. Block 34. Check yes or no to indicate whether the activity listed in blocks 31 and 32 was part of tactical training.

35. Block 35. If the individual was participating in any type of training, check the type of training facility being used at the time of the accident (see FM 25–2 for definitions). (If not applicable, leave blank.)

36. Block 36. If the individual was participating in any type of training, check the type of training in which he was participating. If unit training is selected, also indicate the type of unit training (platoon, crew, or individual). (If not applicable, leave blank.)

37. Block 37. Indicate how long it had been since the individual received training, before the accident, on the activity listed in blocks 31 and 32.

38. Block 38. Determine what protective clothing and equipment was required for the activity/task being performed. If protective clothing and equipment was required, determine if it was; available and used, available but not used, or not available. Check the appropriate blocks for each item of protective clothing and equipment to indicate availability and use/non–use. If no protective clothing and equipment was required, check the N/A (not applicable) column for each type of protective clothing and equipment.

39. Block 39. Indicate whether the individual listed in block 12 was properly licensed to operate the vehicle or equipment that he was operating at the time of the accident. Complete this block whenever operation of a vehicle or piece of equipment requiring a licensed operator is involved.

40. Block 40. Evaluate the actions of the person listed in block 12 and indicate whether or not, in your opinion, alcohol use on his part caused/contributed to this accident. In the space provided after the word unknown indicate test results, if available i.e., percent blood alcohol content (BAC),_____% BAC.

41. Block 41. Evaluate the actions of the person listed in block 12 and indicate whether or not, in your opinion, drug use on his part caused/contributed to this accident. Check none or indicate the type of drug suspected of being involved.

42. Block 42. Indicate if the person listed in block 12 was using a vision–enhancement device (night vision goggles, AN/PVS–5A, night vision device, thermal imagery, FLIR, etc.) at the time of the accident. If a vision–enhancement device was being used, specify type in block 42c and model number in block 42d, even if it did not contribute to the accident.

43. Block 43. Check the type of guidance (standard/reference), if it exists, that covers correct performance of the activity/task identified in blocks 31 and 32. In the space provided following the selected type of guidance, specify by name/number (e.g., FM 21–305, para 3c). Guidance may be written in state/local laws, ARs, TMs, FMs, Soldiers Manuals, SOPs, directives, etc.

44. Block 44. Indicate if the activity/task was being performed in accordance with the guidance (standard/reference) specified in block 43. If the answer is no, complete blocks 45 through 47.

45. Block 45. Indicate whether the individual listed in block 12 made a mistake that caused or contributed to the accident. If the answer is yes, complete blocks 46 and 47. If the answer is no, skip to block 48.

46. Block 46. Provide a simple explanation of the mistake(s) made by the person listed in block 12 or explain how the activity/task was performed incorrectly. When describing mistakes, be sure to use one or more of the mistakes/errors listed at appendix B to identify the specific mistake(s) made by the individual. Include the results or outcome of the mistake(s). For example: The driver made an improper decision to back his M915 truck without a ground guide although one was required. As a result, his vehicle collided with a legally parked sedan. For on duty Class A and B accidents, requiring separate findings and recommendations, reference the finding number in this block.

47. Block 47. Identify why the mistake was made or the activity was performed incorrectly. What was the root cause of the mistake? Carefully consider deficiencies in system design, training, procedures, and command climate, as well as individual factors such as attitude, haste, and overconfidence. Appendix B contains explanations and examples of root causes. Check the most important root cause (reason) and explain in block 63. For on duty Class A and B accidents, requiring separate findings and recommendations and narrative of investigation, the root cause should be fully explained in the findings and supported in the analysis portion of the narrative, and referenced in Block 63.

48. Block 48. If the individual listed in block 12 was operating a vehicle, indicate how long he had been licensed to operate this type of vehicle before the accident.

49. Block 49. If the individual listed in block 12 was operating a vehicle, indicate total miles he had driven Army motor vehicles (include all Army motor vehicles) before the accident.

50. Block 50. Indicate the length of time the individual listed in block 12 had been in the unit shown in block 18 before the accident.

51. Block 51. Check the appropriate block to indicate which item from Section C "Property/Material Involved" was associated with the individual listed in block 12. This information is required to ensure that it can be determined who was operating/using/etc. each item of property/material involved in the accident. For example, PFC Jones was driving the "at–fault" tank; his name will be in block 12, and his vehicle will be item A in section C. Therefore, the correct entry for block 51 would be "Item A." If the property/material associated with the individual will not be items A, B, or C, determine which letter will represent that item (see instructions for section C), check "Other" and specify the appropriate letter in the space provided.

Section C—Property/Material Involved. Complete an entire column (e.g., column entitled Item A) filling in blocks 52 through 59 on each piece of property or item of equipment involved in the accident (whether damaged or not). If the property/material experienced a materiel failure/malfunction, also complete blocks 60 and 61. (Be sure the same column is used for all blocks.) Include Army and non–Army equipment/material, as well as equipment/material whose use or misuse contributed to the accident. Include up to three items of equipment on the initial form. Use additional blank sheets of paper for other equipment, if necessary, continuing letter sequence (e.g., D, E, F, and G). Each column will be used to provide information for one piece of equipment/material.

52. Block 52. Enter the type of property/material (e.g., sedan, truck, generator) involved in the accident. If explosives or ammunition were involved or present, enter the type of explosive/ammunition and the NSN.

53. Block 53. Enter the full military equipment model number and/or civilian make (e.g., M109A2, M60A2, Ford Taurus, M16 rifle). If explosives or ammunition were involved or present, enter the model number and DOD ammunition code (DODAC) or DOD identification code (DODIC).

54. Block 54. Indicate who owns the equipment/material.

55. Block 55. Enter the estimated cost of damage (ECOD) or actual cost of damage (ACOD) for each piece of property.

56. Block 56. Indicate whether a rollover protection system was installed. If rollover protection systems do not apply to the piece of equipment, check NA (not applicable).

57. Block 57. Indicate if this specific piece of equipment was being towed at the time of the accident. (Does not refer to post–accident towing of vehicles/equipment.)

58. Block 58. If the answer in block 57 is yes, indicate in which column (item A, B, C, etc.), the equipment doing the towing is listed.

59. Block 59. From the list provided on the form, select the type(s) that best describe the collision in which this property/material was involved. More than one collision type might be appropriate for the property/material. If so, enter up to three in the blocks provided. If "Other" is selected, specify what type of collision in the space provided. If no collision was involved, leave blank.

Note: If the property listed in blocks 52 and 53 experienced a materiel failure/malfunction that caused or contributed to the accident, complete blocks 60 and 61. Ensure the information is entered in the same column as the involved property. For example, if item A (blocks 52 and 53) experienced a materiel failure/malfunction, the information about that failure/malfunction should be entered in blocks 60 and 61 in the column entitled "Item A."

60. Block 60. Complete items a through d for each component/part whose failure or malfunction contributed to the accident. Enter name/nomenclature of component/part in block 60c. Ensure an equipment improvement report/quality deficiency report (EIR/QDR) is prepared and submitted through appropriate channels for each component/part. Include EIR/QDR number in block 60e.

61. Block 61. Indicate how and why each component/part failed/malfunctioned by selecting from the lists provided on the form and entering the appropriate number in the blocks provided. Appendix B contains explanations and examples. In block 63, include an explanation of how the material failed/malfunctioned and the reason (root cause) for the failure/malfunction. For on duty Class A and B accidents, requiring separate findings and recommendations, the findings should fully explain the failure and cause.

Section D—Environmental Conditions Involved

62. Block 62. Check the appropriate blocks (no more than three) to indicate the environmental conditions present at the time of the accident. Also, check the cause/contributed block if the environmental condition caused or contributed to the accident and explain in block 63 how the environmental condition caused/contributed to the accident. For on duty Class A and B accidents, contributing environmental factors will be fully explained in the findings and analysis portion of the narrative.

Section E—Accident Description/Narrative

63. Block 63. For all accidents describe in detail the sequence of events that led up to and caused the accident. Explain how and why the accident occurred. Also include the information required in blocks 10 and 47. For on Duty Class A and B accidents, requiring separate findings, recommendations and narrative of investigation, reserve the findings and conclusions of the investigation board for the findings and analysis portion of the narrative. Also, enter a note in this block to see the attached findings and narrative of investigation (see narrative outline at paragraph 4–4).

64. Block 64. Provide the name (block 64a), rank (block 64b), title (block 64c), and telephone number (block 64f) of the individual who completed this report. Ensure the information is typed or printed legibly, and specify whether the telephone number is Defense System Network (DSN) or commercial. Also ensure the individual who completed the report signs and dates it in blocks 64d and e. For on duty Class A and B accidents complete Block 4, DA Form 285–B (U.S. Army Accident Report—Index B) and include with the report (see paragraph 4–7).

Section F—Corrective Action and Command Review

Note: The level of command review (company, battalion, division, etc.) is determined by either the MACOM or installation policy.

65. Block 65. For all accidents, excluding on duty Class A and B, fully describe all actions taken, planned, or recommended to eliminate, or at least reduce, the root cause(s) of this accident and prevent similar accidents from happening. Give details to explain the action as it relates to the root causes of the accident. Appendix B, Section III contains descriptions and examples of corrective actions. Identify the appropriate command level for completion of each action at unit–level, higher–level, DA–level. Actions may be directed for implementation at any command level and are not to be restricted by any current technology or budgetary, personnel, and/or equipment limitations. For on duty Class A and B accidents requiring separate findings and recommendations, reference the recommendation number in this block.

66. Block 66. Provide the name (block 66a), rank (block 66b), and telephone number (block 66e) of the unit commander. Ensure the information is typed or printed legibly, and specify whether the telephone number is DSN or commercial. Also ensure the commander

signs and dates the report in blocks 66c and 66d as part of the review process.

67. Blocks 67 through 69. Provide the names (blocks 67a, 68a, and 69a), titles (blocks 67c, 68c, and 69c), and ranks (blocks 67d, 68d, and 69d) of the individuals in the chain of command who have reviewed this report. Ensure the information is typed or printed legibly. Ensure each individual in the chain of command signs and dates the report in blocks 67b and d, 68b and d, or 69b and d. For on duty Class A and B accidents, use Blocks 1 and 2, DA Form 285–O (Statement of Reviewing Officials), for reviewing official and approving authority comments, included at tab A of the report, and reference that form in this block. (See paragraph 4–8.)

Section G—Safety Office Use Only

This section is for local safety office use only and should be left blank by all other personnel. The safety office will complete this section on all accidents.

68. Block 70. Enter the local report number for this accident report.

69. Block 71. Enter the MACOM of the unit shown in block 2 (the unit responsible for the accident).

70. Block 72. Check the accident type(s) that best describe this accident. Check all that apply. Consult AR 385–40 for definitions. If Fratricide is the type of accident, declare it in block 63.

71. Block 73 through 74. Provide the name (block 73) and telephone number (block 74) of the local safety office point of contact for information about this report. Ensure the information is typed or printed legibly, and specify whether the telephone number is DSN or commercial.

72. Block 75. Enter the date the report was completed by the safety office (year, month, day).

Section H—Special Interest and/or Supplemental Information

This section is reserved for use by the U.S. Army Safety Center, MACOMs, or interested safety offices to obtain additional special interest and/or supplemental information on this accident as needed (e.g., M1 tank fires, tactical parachute accidents, etc.). Blocks 76 and 77 have been designated for collection of supplemental information on parachuting accidents and explosives/ammunition (from Blocks 31gg and 10.).

73. Blocks 76 through 79

a. If block 10 was checked “Yes,” enter the lot numbers, quantity and net explosive weight (NEW) of all ammunition and explosives involved or present.

b. If block 31gg, “parachuting”, was checked for any individual, provide the following supplemental information for each such person. Provide all information (items 1 through 16 below) first on one jumper and then on the next jumper until information on all jumpers involved in the accident has been included. Attach blank sheets as needed to provide required information. For definition of “Involved” see instructions for Section B Personnel Involved.

(1) Name of jumper

(2) Jumper height

(3) Jumper weight

(4) Type of jump: static line, nontactical; static line, mass tactical; free–fall, nontactical; free–fall, tactical

(5) Type parachute and model

(6) Jumper’s equipment (list)

(7) Weight of equipment

(8) Wind direction and speed at:

—Jump height

—Drop zone

(9) Jump altitude

(10) Jumper’s position in stick and door exited

(11) Time pre–jump conducted

(12) Date of last jump/type of jump

(13) Number of previous jumps

(14) Date graduated basic airborne training (year/month)

(15) Type aircraft

(16) Accident factors (Parachute): Improper exit, static–line injury, broken static line, parachute malfunction, entanglement, lost/stolen air, oscillation, unstable position, dragged on DZ, tree landing, drop–zone hazard (specify), or other. Explain as necessary.

U.S. ARMY ACCIDENT REPORT
SUMMARY OF WITNESS INTERVIEW
For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-308

1. NAME OF WITNESS (LAST, FIRST, MI)	2. OCCUPATION/TITLE	3. GRADE	4. SSN	5. AGE
CITIZEN, JOHN Q.	Car Salesman	CIV	024-25-8120	39

6. ADDRESS (Include ZIP Code) (If military, include organization)	7. TELEPHONE NUMBER
308 Main Street Tepeetown, WA 94117	(904) 555-4525
	8. DATE OF INTERVIEW 16 January 1994

9. EXPERIENCE AND BACKGROUND	10. LOCATION AT TIME OF ACDT	11. INTERVIEWER
19 yrs LCL Salesman	Behind accident vehicle	MAJ Major

12. Was a promise of confidentiality offered to the witness? ☐ **Yes** ☒ **No** *(If yes, read blk 15a to the witness and complete blk 16. If no, read blk 15b to the witness.)* **Confidentiality was requested by the witness.** ☐ **Yes** ☐ **No** *(If Yes, interviewer sign and date statement below.)*

THE WITNESS MADE THIS STATEMENT UNDER A PROMISE OF CONFIDENTIALITY.

_____ **Signature of Interviewer**

_____ **Date**

13. SUMMARY OF INTERVIEW

Mr. Citizen's statement is summarized as follows:

Mr. Citizen was following the M925A2 truck traveling west on Interstate 10 when the accident occurred. He believes the M925A2 was traveling about 70 mph as it passed his vehicle. He stated that the vehicle abruptly turned left, crossing from the right lane, and struck the median guardrail. The vehicle flipped, became airborne, and then struck a Ford Ranger pickup in the oncoming lane. The vehicle came to rest on its left side. Mr. Citizen proceeded to a telephone, where he called the police.

End of summary.

14. DATE OF ACCIDENT (YYMMDD)
940115

DA FORM 285-W-R, JUL 94

Figure 4-2. Sample of a completed DA Form 285–W

15. GENERAL WITNESS INFORMATION BRIEFING *(Interviewer must read appropiate instructions to the witness)*

a. Promise of confidentiality offered.

(1) This accident investigation board has been convened under the provisions of AR 385-40 for the purpose of conducting a safety investigation.

(2) This may be just one of a number of investigations being conducted regarding this accident; collateral or legal investigations may be ongoing as well. Those investigations are entirely separate from a safety investigation and are also required to inform you of their purpose and of your legal rights.

(3) This safety investigation is being conducted for accident prevention purposes only. Within the military, pursuant to Army Regulation 385-40, it cannot be used for any other purpose, to include any future disciplinary actions against any individuals. Therefore, the interview you are being asked to provide will be used by the Army in the interest of safety and accident prevention only.

(4) Nonconfidential witness interviews may be released to the public pursuant to a Freedom of Information Act request. If you wish to protect your interview from public release outside the military, then your interview must be pursuant to a promise of confidentiality. Confidentiality means that your interview will not be released to the public or outside DOD safety channels.

(5) Whether your interview is confidential or not, the chain of command will review the final accident report, which may include a summary of your interview, but the chain of command may only use the investigation report and the interviews for safety and accident prevention purposes.

(6) If you ever have knowledge that your witness interview was used by the Army for anything other than accident prevention purposes (for example, disciplinary action against an individual), you should consult with your local Judge Advocate Defense Counsel Office and request that the Command Judge Advocate, U.S. Army Safety Center, be notified at DSN 558-3960 or commercial (205) 255-3960.

(7) The promise of confidentiality is available to you if you desire it. Do you desire it?

b. No promise of confidentiality offered.

(1) This accident investigation board has been convened under the provisions of AR 385-40 for the purpose of conducting a safety investigation.

(2) This may be just one of a number of investigations being conducted regarding this accident; collateral or legal investigations may be ongoing as well. Those investigations are entirely separate from a safety investigation and are also required to inform you of their purpose and of your legal rights.

(3) This safety investigation is being conducted for accident prevention purposes only. Within the military, pursuant to Army Regulation 385-40, it cannot be used for any other purpose, to include any future disciplinary actions against any individuals. Therefore, the interview you are being asked to provide will be used by the Army in the interest of safety and accident prevention only.

(4) The chain of command will review the final accident report, which may include a summary of your interview, but the chain of command may only use the investigation report and the interviews for safety and accident prevention purposes. The interview summary may be released to the public pursuant to a Freedom of Information Act request.

(5) If you ever have knowledge that your witness interview was used by the Army for anything other than accident prevention purposes (for example, disciplinary action against an individual), you should consult with your local Judge Advocate Defense Counsel Office and request that the Command Judge Advocate, U.S. Army Safety Center, be notified at DSN 558-3960 or commercial (205) 255-3960.

16. AVAILABILITY OF PROMISE OF CONFIDENTIALITY FOR "LIMITED USE" REPORT OF INVESTIGATION

a. Pursuant to AR 385-40, witness interviews may only be used within the military for purposes of accident prevention, and may not be used as evidence in connection with any administrative or disciplinary proceeding. This protection alone does not prevent release of the interview outside of the military *(to the public, newsparers, attorneys, etc.)* under the Freedom of Information Act. If you wish to protect your interview from release outside of the military, then your interview must be pursuant to a promise of confidentiality.

b. If you do not wish a promise of confidentiality, you may decline such below. In that case, your interview will still be used in the military only for purposes of accident prevention, but it may be released outside of the military in response to a Freedom of Information Act request. Please indicate which option you desire by initialing one of the choices below:

_____I request a promise of confidentiality. I understand that the results of my interview will be used within the military only for the purposes of accident prevention, and will also be protected from public release outside of the military under the Freedom of Information Act.

_____I decline a promise of confidentiality. I understand that the results of my interview will be used within the military only for purposes of accident prevention. I also understand that the results may be publicly released outside of the military under the Freedom of Information Act.

_____

Name of witness *(Print)*

REVERSE OF DA FORM-285-W-R, JUL 94

Page 2

Figure 4-2. Sample of a completed DA Form 285–W—Continued

Legend for Figure 4-2;
Completion instruction for DA Form 285–W

1. Block 1. Self–explanatory.

2. Block 2. Enter general occupation of the witness and duty being performed at time of the accident.

3. Block 3. Enter the grade of witness. Use codes from Table 4–3.

4. Blocks 4 – 6. Self–explanatory.

5. Block 7. List defense satellite network (DSN) number if applicable.

6. Block 8. Enter date(s) statement(s) was/were made.

7. Block 9. Enter a summary of experience, expertise, and background in duty/MOS involved in the accident.

8. Block 10. Enter location of witness at the time of the accident relative to the accident.

9. Block 11. Enter grade and last name of person in charge of interview. If witness is interviewed by different persons in charge on separate occasions, list all interviewers in charge and prefix each name with"1st," "2d," "3d," etc., to designate which interview session the interviewer conducted.

10. Block 12. Check the appropriate box to indicate if the witness was/was not offered a promise of confidentiality. Also, check the appropriate box to indicate whether or not the witness requested a promise of confidentiality. If "Yes" was checked, the interviewer must sign and date the confidentiality statement.

11. Block 13. Summary of interview, will be completed as follows:

a. *Multiple interviews, same witness.* Prefix the summary of each interview with the date and indicate if the statement is the 1st, 2d, 3d, etc.

b. *Comprehensiveness.* As a general rule, the interview summaries of persons involved/injured in the accident should be summarized in greater detail than the statements of others. This is because the personnel involved are the best source of information pertaining to the accident chronology of events. The chronology for the "history of events," Narrative of Investigation (see paragraph 4–4), will most often be obtained from the personnel involved and should be used as a guide in determining what elements of information to include in the interview summaries. If human error appears to be involved in the accident, the mistake/errors and system inadequacy(ies) listed in the instructions for completing the findings and recommendations (see paragraph 4–3) are useful for determining what should be addressed in the witness summaries.

c. *Consolidating.* When several witnesses, other than person(s) involved, provide essentially the same observations, it is not necessary to prepare a separate DA Form 285–W for each witness except for statements made with a promise of confidentiality. In cases where the summarized statements of several witnesses can be consolidated, it is appropriate to leave blocks 1 through 9 blank. In block 13, list the names of the witnesses and then summarize their collective observations.

d. *Format.* The proper format is a concise summary of information elements. An example is as follows: "This witness was a passenger (identify location of passenger) in the vehicle at the time of the accident." His account of the accident essentially agreed with the "history of events" portion of DA Form 285–W. Additionally, he heard a grinding noise in the area of the right rear wheel, prior to the brake failure. In cases where such is essential, limited direct quotes of a witness (together with the specific questions they are in response to) may be used. This, again, should be done sparingly and only when necessary. It is important that the statement be the investigator's summarization and not an exact verbatim transcript of what the witness said. The summary should be written in the third person ("The witness said," "he said,") and not the first person ("I saw," "I heard").

12. Block 14. Enter the date of the accident.

13. Block 15. Interviewer will read block 15a or 15b to each witness, depending upon the category and/or circumstances of the witness.

14. Block 16. Those witnesses which were offered a promise of confidentiality, must indicate acceptance or refusal by initialing the appropriate statement.

U.S. ARMY ACCIDENT REPORT
INDEX A
For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-308

1. DATE OF ACCIDENT *(YYMMDD)*
940115

2. TAB	Information	Encl	Not Applic	See Remarks
1	Serious Incident/Casualty Report	X		
2	Copy of Orders Appointing Investigating Board	X		
3	Map of Accident Site	X		
4	Diagrams and/or Photographs	X		
5	Certificate of Damage/ECOD	X		
6	Copy of Deficiency Reports	X		
7	Copy of Directives, Regulations, Etc.	X		
8	Special Technical Reports and Laboratory Analysis	X		
9	Copy of Uncorrected Fault Record	X		
10	Copy of Equipment Modification Record *(DA Form 2408-5)*	X		
11	Weather Data		X	
12	Medical Data *(Autopsy, Toxicology, AFIP, etc.)*			X
13	Other *(Specify)*			
14	Other *(Specify)*			
15	Other *(Specify)*			
16	Other *(Specify)*			
17	Other *(Specify)*			
18	Other *(Specify)*			

3. REMARKS
2.12. Medical information for civilian driver not available for inclusion in the report.

DA FORM 285-A-R, JUL 94

Figure 4-3. Sample of a completed DA Form 285–A–R, Index A

U.S. ARMY ACCIDENT REPORT
INDEX B
For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-308

1. DATE OF ACCIDENT *(YYMMDD)*
940115

2. TAB	Title	Encl	Not Appl	See Remarks
A	Statement of Reviewing Officials *(DA Form 285-O)*	X		X
B	U.S. Army Accident Report *(DA Form 285)*	X		
C	Findings and Recommendations	X		
D	Narrative of Accident	X		
E	Summary of Witness Interviews *(DA Form 285-W)*	X		

3. REMARKS

2.a. Enclosed in channel copy only.

4. BOARD MEMBERS

a. President *(Name and Signature)* JOHN D. MAJOR	SSN 999-77-8888 Grade: 04 Br: IN	Address and Tel No. DSN 558-3262	U.S. Army Safety Center Ft. Rucker, AL 36362-5363
b. Recorder *(Name and Signature)* RALPH L. WRITER	SSN 888-99-6655 Grade: W5 Br: USA	Address and Tel No. DSN 558-3262	U.S. Army Safety Center Ft. Rucker, AL 36362-5363
c. Flight Surgeon *(Name and Signature)* ROBERT B. LIFESAVER	SSN 777-66-5555 Grade: 04 Br: MC	Address and Tel No. DSN 222-4400	Water Army Community Hosp. Ft. Water, WA 94118-2809
d. Instructor Pilot *(Name and Signature)* WILLIAM A. NOMAD	SSN 444-55-6666 Grade: E8 Br:	Address and Tel No. DSN 222-6666	16th Maint Spt Bn Ft. Water, WA 94118-2809
e. Maint Officer *(Name and Signature)* JAMES M. FIXER	SSN 555-44-3333 Grade: W4 Br: USA	Address and Tel No. DSN 222-6667	16th Maint Spt Bn Ft. Water, WA 94118-2809
f. Other *(Name and Signature)* WILLIAM A. ADVISOR	SSN 444-33-2222 Grade: GS13 Br:	Address and Tel No. DSN 872-9988	TACOM Warren, MI 48397-5000

DA FORM 285-B-R, JUL 94

Figure 4-4. Sample of a completed DA Form 285–B–R, Index B

Legend for Figure 4-4;
Completion instructions for DA Forms 285–A–R and 285–B–R

1. Block 1, DA Forms 285–A–R & 285–B–R. Enter the date of the accident.

2. Block 2, DA Forms 285–A–R & 285–B–R. Place an "X" in the block opposite each item to indicate whether the information is "Enclosed" or "Not applicable." An "X" in the "See remarks" block requires an explanation in block 3 "Remarks" section of the form.

3. Block 3. DA Forms 285–A–R & 285–B–R. The remarks block is used to indicate that required information is being delayed or not available to the accident investigation board. Remarks pertaining to delayed information will contain an estimated forwarding date. Remarks pertaining to unavailable information will include reasons for non–availability.

4. Block 4, DA Form 285–B–R. Type signature block of all board members to include SSN, grade, branch, unit address and telephone number. Each board member will sign all copies of the accident report unless a minority report is submitted in accordance with chapter 2 of this pamphlet. Use a continuation sheet if there are more than six board members.

U.S. ARMY ACCIDENT REPORT
STATEMENT OF REVIEWING OFFICIALS
For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-308

1. REVIEWING OFFICIALS COMMENTS

Comment 1:

1. Concur with the findings and recommendations of the accident investigation board.

2. Actions specified in recommendations 2a and 3a pertaining to this level of command were implemented.

Richard F. Foreman
RICHARD F. FOREMAN, MAJ, AR, Commanding

Comment 2:

1. Concur with the findings and recommendations of the accident investigation board.

(See continuation sheet)

2. APPROVING AUTHORITY COMMENTS

1. Concur with findings and recommendations of the accident investigation board and comments of the reviewing officials.

2. Actions recommended by the board pertaining to higher headquarters are considered adequate. This command has no further recommendations.

BRIAN D. DIRECTOR, MG, Commanding

a. Signature: Brian D. Director

3. DEPARTMENT OF ARMY REVIEW

Findings and recommendations of the accident investigation Board are considered correct and appropriate. DA level recommendations have been forwarded to the appropriate agency for action. Facts and circumstances pertaining to this accident were published in the Jun 94, Vol 15, No. 2 issue of Countermeasure. The report data is approved for inclusion into the USASC data base.

HENRY P. PRESERVER, LTC, IN, XO

a. Signature: Henry P. Preserver

4. DATE OF ACCIDENT *(YYMMDD)*
940115

DA FORM 285-O-R, JUL 94

Figure 4-5. DA Form 285–O–R, U.S. Army Accident Report, Statement of Reviewing Officials

Legend for Figure 4-5;
Completion instructions for DA Forms 285–O–R

1. Block 1. The reviewing official(s) will indicate the official's organization and will:

a. State concurrence or nonconcurrence with the technical report. Any nonconcurrence will be fully explained.

b. Report actions taken as well as recommendations for additional action by higher headquarters or other Army commands. Attach, as enclosures to this form, copies of correspondence, forms, and other data requiring additional action.

c. Define those area(s) recommended for improvement/remedial action by the investigating board that are beyond the resources available to the command and so indicate in the forwarding endorsement to the approving authority.

d. Authenticate comments with signature and appropriate signature block at the close of each reviewing official's remarks.

e. Higher command reviewing official(s) will indicate the official's organization and enter the same information as (a) through (d) (above) as comment number 2, 3, etc.

2. Block 2. The approving authority will indicate his command and approval or disapproval of the report. Reasons for disapproval and/or additional actions directed will be reported. The approving authority will make note of those areas recommended for improvement/remedial action by the accident investigation board or reviewing officials on which action can or will be completed by the approving headquarters. If corrective action is beyond the purview or capability of the approving authority, this will be stated. For Block 2a, the approving authority's authentication will be entered.

3. Block 3 is reserved for USASC use. Block 3 will be completed by the USASC to show coordination/follow–up taken in response to recommendations requiring DA–level action.

4. Block 4. Enter the date of the accident.

U.S. ARMY ABBREVIATED GROUND ACCIDENT REPORT *(AGAR)*

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENT CONTROL SYMBOL
CSOCS-308

1. TIME & DATE OF ACCIDENT	a. Yr 94	b. Mth 01	c. Day 21	d. Time 2330	2. PERIOD OF DAY	Day X	Night	3. ACDT CLASS A	4. ACDT OCCURRED DURING: Combat X Non-Combat
5. UNIT IDENTIFICATION	a. UIC *(6-digit Code)* WABCCO	b. Name of Unit Co C, 3d Bn, 6th AR	c. Unit's Branch AR	d. MACOM COCOM					
6. LOCATION OF ACCIDENT	a. Exact Location *(Detailed enough to locate site)* Interstate 10, near Tepeetown, WA, at mile marker 101							b. Type Location B3	
c. State/Country WA	d. X Off Post	On Post Name:	7. EXPLOSIVES/AMMO	a. Present Yes X No	b. Involved Yes X No				
8. MISSION	a. Briefly describe the mission Off Duty							b. METL Task? Yes X No	

9. VEHICLE/EQUIPMENT/MATERIEL INVOLVED — Materiel Failure/Malfunction Information

	a. Type of Item (Nomenclature)	b. Model #	c. Ownership	d. Estimated Cost of Damage	e. Vehicle Collision	f. Failure Mode	g. Part Nomenclature	h. Part #	i. Part NSN	j. Part Manufacturer Code	k. EIR/QDR Submitted
#1	1993 Chev	Camero	POV	$14,000.00	7.5	07	Tire, Radial	Unk	Unk	Unk	Yes X No
#2											Yes No

10. WHY DID THE MATERIEL FAIL/MALFUNCTION? *(Check the root cause(s) in Block a. In Block b, explain how the root cause(s) led to the materiel failure/malfunction.)*

a.	LEADER *(Not ready, willing to enforce standards)*		STDS/PROCEDURES *(Not clear, Not practical)*		SUPPORT *(Shortcomings in type, capability, amount or condition of equip/supplies/services/facilities)*		
	Direct Supervision		AR		SOP		Equip/Materiel improperly designed	X	Inadequate Manufacture
	Unit Command Supervision		TM		Other		Equip/Materiel not provided		Inadequate Maintenance
	Higher Command Supervision		FM		None exists		Inadequate Facilities/Services		Other

b. Describe how the materiel failed/malfunctioned and explain why *(root cause)*
Left front tire failed because of a defective spot in the tire wall.

11. NAME (Last, First, MI) (Include Address & UIC if different than Blks 5a & b.)	12. SOCIAL SECURITY #	13. PERSONNEL CLASSIFICATION	14. MOS	15. DUTY STATUS
DRIVER, RICK L.	333-44-5656	A	88M10	On-duty X Off-duty

16. AGE	17. SEX	18. PAY GRADE	19. FLIGHT STATUS
21	M	E3	Yes X No

20. MOST SEVERE INJURY *(See Instructions)*: a. Degree A; b. Type i; c. Body Part b; d. Cause a

21. DAYS HOSPITALIZED	22. WORKDAYS	a. Lost	b. Restricted

ACTIVITY OF INDIVIDUAL *Provide code (from list in instructions) and describe in space below*

23. CODE	24. SPECIFIC DESCRIPTION OF ACTIVITY/TASK
P	Operating a POV on an Interstate Highway.

25. PERSONAL PROTECTIVE EQUIP | 26. ALCOHOL/DRUGS CAUSED/CONT Yes No X Unk | 27. EQUIP THIS PERSON WAS ASSOCIATED WITH? *(Enter Item No. from Blk 9a)*

a. Required	b. Type of equip	c. Available	d. Used	28. LICENSED TO OPERATE EQUIP	29. HRS ON DUTY	30. HRS SLEEP	31. TACTICAL TRAINING	32. TYPE TRAINING FACILITY	33. LAST TRAINING	34. FIELD TRAINING EXERCISE	35. NIGHT VISION SYSTEM USED
X Yes No	#1 A	#1 Yes	#1 No	X Yes No	NA	6	Yes X No			Yes If Yes, provide name: No	Yes If Yes, provide name: No
	#2	#2	#2								

36. DID INDIVIDUAL MAKE A MISTAKE THAT CAUSED/CONTRIBUTED TO ACCIDENT? *In Blk a., indicate if individual made a mistake. If yes provide the code (from instructions) in Blk b. and describe in Blk c.*

a. Mistake X Yes No

b. Code 40

c. Tell what the mistake was and how it caused/contributed to the accident The driver was exceeding the posted speed limit of 65 mph, and was unable to control the vehicle, when the left front tire blew out.

DA FORM-285-AB-R, JUL 94

Figure 4-6. Sample of a completed DA Form 285-AB-R

37. WHY WAS THE MISTAKE MADE *(ROOT CAUSE) (Check the root cause(s) in Blk a., in Blk b. tell how the root cause(s) led to the mistake.)*

a.	LEADER *(Not ready, willing to enforce standards)*		TRAINING *(Insufficient in Content/Amount)*		STDS/PROCEDURES *(Not clear/Not practical)*		SUPPORT *(Shortcomings in type, capability, amount or condition of equip/supplies/services/facilities)*		INDIVIDUAL *(Mistake due to own personal factors)*			
	Direct Supervision		School		AR		Equip/Materiel improperly designed		Inadequate Manufacture		Poor/Bad attitude		Fatigue
	Unit Command Supervision		Unit		TM		Equip/Materiel not provided		Inadequate Maintenance	X	Overconfident		Alcohol, Drugs
	Higher Command Supervision		Experience, OJT		FM		Inadequate Facilities/Services		Other		In a hurry		Fear/Excitement
						None exists							

b. Describe root cause(s) *(reason)* and tell how it/they caused the mistake

The driver was overconfident in his ability to control the vehicle at a high rate of speed, because he frequently exceeded 80 mph, while driving on the interstate, with no difficulties or accidents.

38. ENVIRONMENTAL CONDITIONS

	a. Present:	b. Caused/Contributed?		
#1	A	Yes	X No	Unk
#2		Yes	No	Unk
#3		Yes	No	Unk

39. PROVIDE BRIEF SYNOPSIS OF ACDT *(Use additional sheets if required) (Explain sequence of events, tell how acdt happened.)*

The 1993 Chevrolet Camero was traveling west on I-10, at a high rate of speed (approximately 80 mph), near the Tepeetown, Washington, exit, at mile marker 101, when the left front tire blew out. The vehicle veered sharply to the left and struck the median guardrail, then flipped end over end into the opposing traffic lane, coming to rest inverted. The driver received fatal injuries and the vehicle was extensively damaged.

40. CORRECTIVE ACTIONS(S) TAKEN OR PLANNED

Inform assigned personnel of the facts and circumstances surrounding this accident, with emphasis on obeying traffic laws.

41. POINT OF CONTACT FOR INFORMATION ON THE ACCIDENT

a. Name (Last, First, MI)	b. Telephone #
ADVISOR, ROBERT A.	DSN: 222-3444 COM: (201) 774-3444

42. COMMAND REVIEW a. Name	c. Rank	43. SAFETY OFFICE REVIEW	b. Date
RICHARD F. FOREMAN	MAJ	a. Name JOHN D. SAFEMAN	940208
b. Signature	d. Date 940210		

REVERSE OF DA FORM 285-AB-R, JUL 94

PAGE 2

Figure 4-6. Sample of a completed DA Form 285-AB-R—Continued

Legend for Figure 4-6;
Completion instructions for DA Forms 285–AB–R

(Note: Items without instructions are self–explanatory.)

1. Block 3, Accident Class. Enter the accident's classification: A, B, C, or D (see definitions in AR 385–40).

2. Block 5, Unit Identification. Unit or activity accountable for this accident.

3. Block 6, Location

a. **Block 6a.** Enter the exact location of the accident (e.g., building number, street name and address, distance from nearest landmark, etc.)

b. **Block 6b.** Enter one code for primary function of the accident location, see Table 4–3.

c. **Block 6d.** Indicate whether the accident occurred on–post or off–post and, if on–post, enter the name of the installation/activity.

4. Block 9, Vehicle/Equipment/Materiel Involved. "Involved" means vehicle/equipment/materiel/property that is damaged, whose use or misuse contributed to the accident or whose materiel failure/malfunction caused and/or contributed to the accident. Include Army and non–Army equipment/materiel. Use one line for each piece of equipment or item and enter the requested information. Continue on blank paper, if necessary.

a. **Block 9c.** Indicate who owns the vehicle/equipment/materiel (e.g., DOD, DA, unit, person).

b. **Block 9d.** Enter an estimate of the damage cost for the piece of equipment listed in Block 9a.

c. **Block 9e.** From the list below select the type(s) of collision in which this property/materiel was involved. More than one collision type might be appropriate for the property/materiel. If so, enter up to three in the space provided. If "Other" is selected, specify what type of collision in the space provided. If no collision was involved, leave blank.

1 = Going forward & collided with moving vehicle
2 = Going forward & collided with parked vehicle
3 = Collision while backing
4 = Collision with pedestrian
5 = Collision with object (other than vehicle/pedestrian)
6 = Overturned
7 = Ran off road
8 = Jackknifed
9 = Going forward & rear–ended with moving vehicle
10 = Going forward & rear–ended stopped vehicle
11 = Collision while turning
12 = Other (specify)

Note: If the item in Block 9a experienced a materiel failure/malfunction that caused or contributed to the accident, complete Blocks 9f–9k and Block 10. If not, skip to Block 11.

d. **Block 9f.** Enter the code that indicates how the component/part failed/malfunctioned (mode of failure). See appendix B for list and examples of failure codes.

5. Block 10. Why Did the Materiel Fail/Malfunction (Root Cause)? Materiel failures/malfunctions can be caused by shortcomings of leaders, standards/procedures, or support.

a. Specific causes may include:

(1) Leader—Direct, Unit Command or Higher Command Supervision not ready, willing, or able to enforce standards.

(2) Standards/procedures—AR, TM, FM, SOP, or other standards/procedures not clear or not practical or standards/procedures do not exist.

(3) Support—Shortcomings in type, capability, amount or condition of equipment, supplies, services, or facilities (equip/materiel not provided or improperly designed, inadequate manufacture or maintenance, or inadequate facilities/services).

b. **Block 10a.** Determine the underlying reason (root cause(s)) the materiel failed/malfunctioned and check accordingly (see Appendix B.)

c. **Block 10b.** Describe how the materiel failed/malfunctioned and explain why (i.e., explain mode of failure from Block 9f and root cause).

Example: **Block 10a** = "Stds/Procedures—TM"

Note: Blocks 11–37 (Personnel Information) should be completed on each person involved in the accident. Involved means any person who was injured or who took actions or made decisions that caused or contributed to the accident. If more than one person is involved, enter information on only one person on the initial form and use separate forms for each additional person, completing only blocks 11–37 on these additional forms.

6. Block 13, Personnel Classification. Enter the code for the classification (at the time of the accident) of the person listed in block 11. See DA Form 285, Block 27, at Figure 4–2 for codes to be used.

7. Block 14, MOS. Enter the MOS or job series of the individual.

8. Block 20, Most Severe Injury. Complete Blocks a–d on the individual's most severe injury.

a. **Block 20a, Degree.** Enter the code that indicates the severity of the injury to the individual. If more than one applies, enter the most severe. See glossary for definitions of the following.

a = Fatal
b = Permanent Total Disability
c = Permanent Partial Disability
d = Days Away From Work
e = Restricted Work Activity (Light duty, profile, etc.)
f = First Aid Only
g = No injury

b. **Block 20b, Injury Type.** Enter the code that best describes this person's most serious injury type. See DA Form 285, Block 30, at Figure 4–1, for codes to be used.

c. **Block 20c, Body Part.** Enter the code that best describes the most seriously injured part of this person's body. Body part entered here should be the one with the injury indicated in previous block. See DA Form 285, Block 29, At Figure 4–1 for codes to be used.

d. **Block 20d, Cause.** Enter the code that best describes the cause of the most serious injury to this individual. See DA Form 285, Block 28, at Figure 4–1 for codes to be used.

9. Block 21, Days Hospitalized. Enter the estimated or actual total number of days this individual will be hospitalized (inpatient/admitted) receiving treatment. Days hospitalized for "observation only" are not included.

10. Block 22, Workdays

a. **Block 22a, Workdays Lost.** Enter the estimated or actual number of days this individual will be away from work (totally unable to perform any work, on bed rest/quarters). Workdays lost does not include days hospitalized or the day of injury.

b. **Block 22b, Workdays Restricted.** Enter the estimated or actual number of workdays the individual will not be able to perform all of his or her regular duties AFTER going back to work (light duty/profile).

Note: Complete Blocks 23 and 24 with the individual's activity at the time of the accident.

11. Block 23, Activity Code. Enter the code that best describes the

individual's activity at the time of the accident. See DA Form 285, Block 31, at Figure 4–1, for codes to be used.

12. Block 25, Personal Protective clothing and equipment.

a. **Block 25a.** Check YES or NO to indicate whether any personal protective clothing and equipment was required for the activity/task being performed by this individual. If YES, complete Block 25b–d. If NO, skip to Block 26.

b. **Block 25b.** Enter the code for the type of equipment that was required.

A = Seatbelt
B = Helmet
C = Goggles/glasses
D = Gloves
E = Earplugs
F = Other (specify)

c. **Blocks 25c & d.** If protective clothing and equipment was required. Enter YES or NO in the appropriate blocks to indicate the item's availability (Block 25c) and use/non–use (Block 25d). Determine if it was:

(1) Available and used.
(2) Available but not used.
(3) Not available.

13. Block 27. Equipment this Person was Associated With? Enter the item number (e.g., #1, #2) from Block 9a, that indicates which piece of equipment this individual was associated with.

14. Block 28. Licensed to Operate Equipment. If this individual was operating a vehicle or equipment (at the time of the accident) that required a license to operate, indicate if the individual had such a license (current). If no license was required or no equipment was being operated, skip to Block 29.

15. Block 29, Hours On–Duty. Enter the number of continuous hours without sleep this individual was on–duty prior to the accident.

16. Block 30, Hours Sleep. Enter the number of hours of sleep (cumulative) this individual had in the past 24 hours.

Note: The following definitions apply to Blocks 31, 32, and 34:

1. *Tactical Training.* Training in a field environment that uses or develops combat or combat support skills.

2. *Field Exercise and Tactical Training.* This begins when the individual reports to his or her primary duty location for movement to the field site and ends when he or she arrives back at the primary duty location from the field.

17. Block 31. Tactical Training. Indicate whether the activity listed in Blocks 23 and 24 was part of tactical training.

18. Block 32. Type Training Facility. If the individual was participating in any type of training, enter the code for the type of training facility being used (see FM 25–2 for definitions). If not applicable, leave blank.

Code/Facility
A = Garrison
B = Local training area
C = Major training area
D = NTC
E = JRTC
F = CMTC
G = Standard range facility/live fire
H = Other (specify)

19. Block 33, Last Training. For the activity specified in Blocks 23 and 24, enter the number of months since the last time the individual received training prior to the accident.

20. Block 35, Night Vision System. Indicate if night vision systems (devices) were being used by this individual at the time of the accident (e.g., night vision goggles, AN/PVS–5–A). If used, specify the type. If they caused or contributed to the accident, explain in Block 39.

21. Block 36. Did Individual Make a Mistake that Caused/Contributed to Accident?

a. **Block 36a.** In your opinion, did this individual make a mistake that caused and/or contributed to the accident? If the answer is YES, complete Blocks 36b and 36c, and Block 37. If NO, skip to Block 38.

(35) Block 36b. Enter the code that best indicates the type of mistake made by this individual. Appendix B lists and explains all the mistake/error codes.

(36) Block 36c. Describe the mistake and how it caused/contributed to the accident. Be specific.

Example:
Block 36a = "YES"
Block 36b = "52"
Block 36c = "M109A3 howitzer driver trainee was being ground guided into parking space. When given the signal to stop, driver moved his foot left to apply brakes and depressed upper level of accelerator pedal instead (improper braking—improper foot placement on pedal). Ground guide was run over."

22. Block 37. Why was Mistake Made (Root Cause)? Mistakes can be caused by shortcomings of leaders, training, standards/procedures, support, or the individual.

a. Specific causes include:

(1) Leader—Direct, Unit Command, or Higher Command Supervision not ready, willing, or able to enforce known standards.

(2) Training—School training, Unit training, or Experience/On–the–Job training insufficient in content/amount.

(3) Standards/procedures—Standards/procedures not clear or not practical or standards/procedures do not exist.

(4) Support—Shortcomings in type, capability, amount or condition of equipment, supplies, services, facilities, and number and type personnel.

(5) Individual—Soldier knows and is trained to standard but elects not to follow standard (self–discipline—mistake due to own personal factors).

b. **37a.** Identify why the mistake was made (specific root cause(s)). See appendix B for definitions.

c. **Block 37b.** Describe the root cause(s) and tell how it/they caused the mistake. See appendix B for explanations.

Example:
Block 37a = "Support—Equip/Materiel Improperly Designed"
Block 37b = "Design of accelerator pedal on M109 series, unlike M110, consists of two distinct levels with upper level immediately adjacent to brake pedal. As a result, when M109A3 howitzer driver trainee was given the signal to stop, he moved his foot left to apply brakes and depressed upper level of accelerator pedal instead (improper braking—improper foot placement on pedal)."

23. Block 38. Environmental Conditions. Enter the code(s) (no more than three—from the list below) to indicate the conditions present at the time of the accident. Also indicate if the condition caused or contributed to the accident by checking the caused/contributed block and, if YES, explaining lin Block 39 (see appendix B).

Code/Condition
A = Clear/dry
B = Bright/glare
C = Dark/dim
D = Fog/condensation/frost

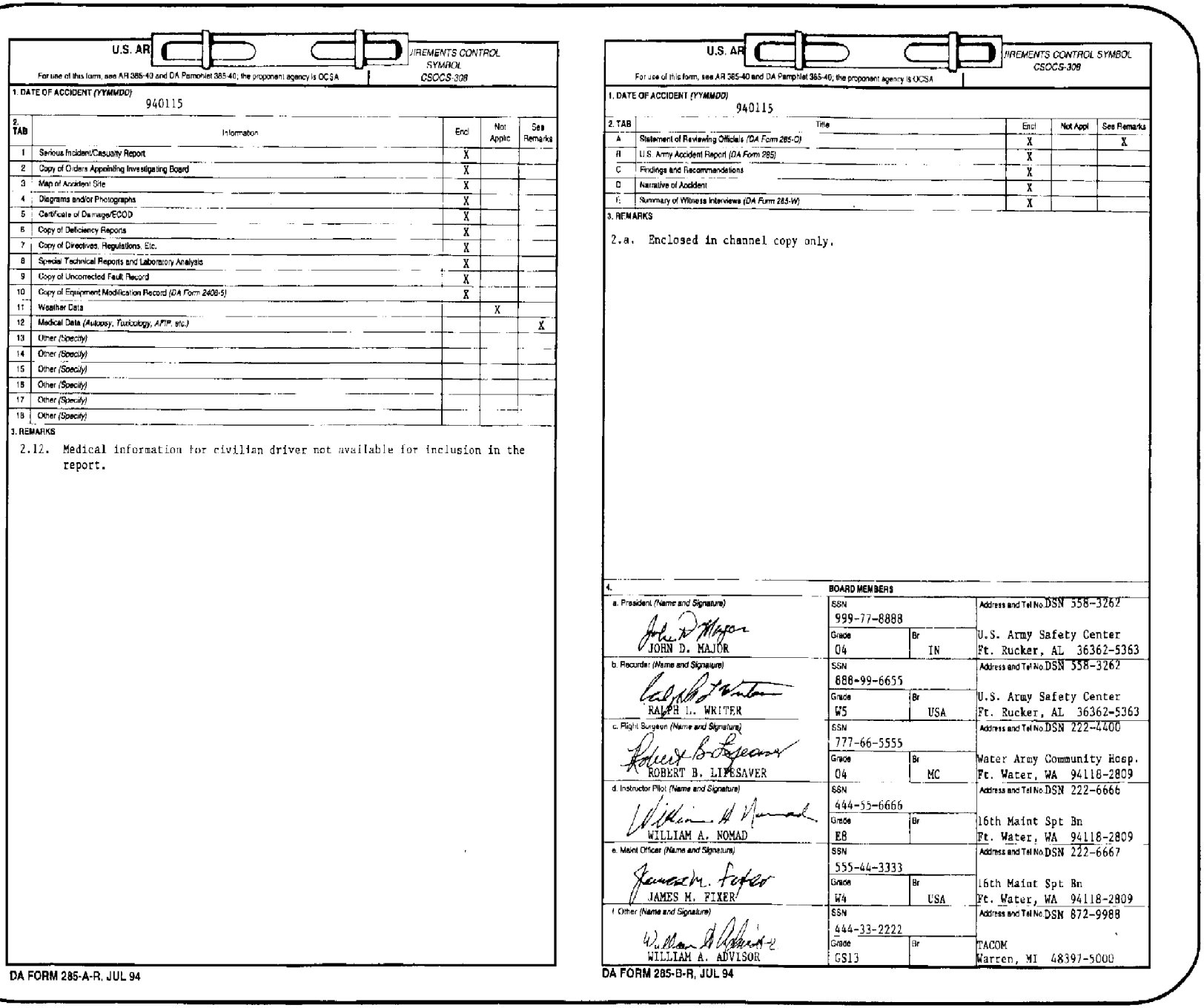
E = Mist/rain/sleet/hail
F = Snow/ice
G = Dust/fumes/gasses/smoke/vapors
H = Noise/bang/static
I = Temperature/humidity (cold/heat)
J = Storm/hurricane/tornado
K = Wind/gust/turbulence
L = Vibrate/shimmy/sway/shake
M = Radiation/laser/sunlight
N = Holes/rocky/rough/rutted/uneven
O = Inclined/steep
P = Slippery (not due to precipitation)
Q = Air pressure (bends, decompression, altitude, hypoxia)
R = Lightning/static electricity/grounding
S = Electromagnetic radiation (EMR) T = OTHER (specify)

24. Block 39. Provide a brief synopsis of the accident on a separate sheet of paper and attach it to the report.

25. Block 40. Corrective Action(s) Taken or Planned. Briefly describe all actions taken, planned, or recommended to eliminate, or at least reduce, the root cause(s) of this accident and prevent similar accidents from happening (see appendix B).

26. Block 41, Point of Contact. Individual who can answer questions about this accident.

27. Block 42. Command Review. As locally required.



U.S. AR [illegible] UIREMENTS CONTROL SYMBOL CSOCS-308

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

1. DATE OF ACCIDENT (YYMMDD)
940115

2. TAB	Information	Encl	Not Applic	See Remarks
1	Serious Incident/Casualty Report	X		
2	Copy of Orders Appointing Investigating Board	X		
3	Map of Accident Site	X		
4	Diagrams and/or Photographs	X		
5	Certificate of Damage/ECOD	X		
6	Copy of Deficiency Reports	X		
7	Copy of Directives, Regulations, Etc.	X		
8	Special Technical Reports and Laboratory Analysis	X		
9	Copy of Uncorrected Fault Record	X		
10	Copy of Equipment Modification Record (DA Form 2408-5)	X		
11	Weather Data		X	
12	Medical Data (Autopsy, Toxicology, AFIP, etc.)			X
13	Other (Specify)			
14	Other (Specify)			
15	Other (Specify)			
16	Other (Specify)			
17	Other (Specify)			
18	Other (Specify)			

3. REMARKS

2.12. Medical information for civilian driver not available for inclusion in the report.

DA FORM 285-A-R, JUL 94

U.S. AR [illegible] UIREMENTS CONTROL SYMBOL CSOCS-308

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

1. DATE OF ACCIDENT (YYMMDD)
940115

2. TAB	Title	Encl	Not Appl	See Remarks
A	Statement of Reviewing Officials (DA Form 285-O)	X		X
B	U.S. Army Accident Report (DA Form 285)	X		
C	Findings and Recommendations	X		
D	Narrative of Accident	X		
E	Summary of Witness Interviews (DA Form 285-W)	X		

3. REMARKS

2.a. Enclosed in channel copy only.

4. BOARD MEMBERS

	SSN	Grade	Br	Address and Tel No.
a. President (Name and Signature) JOHN D. MAJOR	999-77-8888	O4	IN	DSN 558-3262 U.S. Army Safety Center Ft. Rucker, AL 36362-5363
b. Recorder (Name and Signature) RALPH L. WRITER	888-99-6655	W5	USA	DSN 558-3262 U.S. Army Safety Center Ft. Rucker, AL 36362-5363
c. Flight Surgeon (Name and Signature) ROBERT B. LIFESAVER	777-66-5555	O4	MC	DSN 222-4400 Water Army Community Hosp. Ft. Water, WA 94118-2809
d. Instructor Pilot (Name and Signature) WILLIAM A. NOMAD	444-55-6666	E8		DSN 222-6666 16th Maint Spt Bn Ft. Water, WA 94118-2809
e. Maint Officer (Name and Signature) JAMES M. FIXER	555-44-3333	W4	USA	DSN 222-6667 16th Maint Spt Bn Ft. Water, WA 94118-2809
f. Other (Name and Signature) WILLIAM A. ADVISOR	444-33-2222	GS13		DSN 872-9988 TACOM Warren, MI 48397-5000

DA FORM 285-B-R, JUL 94

Figure 4-7. Sample ground accident folder layout

Table 4–2
Army Branches

Army Branch	Abbreviation
Adjutant General's Corp	AG
Air Defense Artillery	AD
Armor	AR
Army Medical Specialist Corps	SP
Army Nurse Corps	AN
Aviation	AV
Chaplain	CH
Chemical	CM
Dental Corps	DC
Engineers	EN
Field Artillery	FA
Finance Corps	FC
Infantry	IN
Judge Advocate General's Corp	JA
Medical Corps	MC
Medical Service Corps	MS
Military Intelligence	MI
Military Police	MP
Ordnance	OR
Public Affairs	PA
Quartermaster Corps	QM
Signal Corps	SC
Special Forces	SF
Transportation Corps	TC
Veterinary Corps	VC

Table 4–3
Types of Accident Locations

Code	Type Location
Maintenance/fabrication facility	
A1	Vehicle facility (motor pool, maintenance shop)
A2	Aircraft facility (hangar)
A3	Vessel facility (boat overhaul/rebuild facility)
A4	Engineer facility (carpentry/electrical/plumbing shop)
A5	Other maintenance facility
Travel ways	
B1	Pedestrian way (sidewalk)
B2	Vehicle trail (tank trail)
B3	Roadway (street, curb, shoulder, driveway)
B4	Parking lot
B5	Aircraft way (flight line, runway)
B6	Railroad
Other operational facilities/areas	
C1	Office building
C2	Communications facility
C3	Construction site
C4	Security/law–enforcement facility
C5	Bridge
C6	Dam
C7	Navigation locks
C8	Barge
C9	Dredge
C10	Floating plant
C11	Vessel (not elsewhere coded)
C12	ARNG/Reserve armory
Training Areas	
D1	Range—small arms/individual weapons
D2	Range—crew–served weapons
D3	Range—aerial firing/bombing
D4	Range—infiltration course
D5	Dedicated nonfiring training area (obstacle/confidence course, parachute drop zone, landing zone, stagefield)
D6	Temporary training area (unit assembly area, bivouac area)

Table 4–3
Types of Accident Locations—Continued

Code	Type Location
D7	Range—EOD
Service facilities	
E1	Library
E2	Chapel/church
E3	Child–care center
E4	Post office
E5	Laboratory
E6	Medical care facility
E7	Fire station
E8	Commissary
E9	Post exchange
E10	Dining facilities
E11	Post exchange, service station, gas station
E12	Museum
E13	Animal–care facility
E14	Refuse disposal area
E15	Laundry/cleaning facility
Terrain and water locations	
F1	Sloped terrain (ditch, mountain)
F2	Wooded terrain (forest, swamp, marsh)
F3	Open terrain (field, desert)
F4	Moving bodies of water (creek, stream, river)
F5	Standing bodies of water (pond, lake, ocean)
F6	Lake shore/beach
Storage facilities	
G1	Storage buildings (ammunition bunker, warehouse, barn, storage shed)
G2	Outside storage area (POL dump, property disposal area)
Plants and factories	
H1	Heating plant
H2	Printing plant
H3	Electric generating plant (includes power substations)
H4	Ammunition/weapons manufacturing plant
H5	Other industrial plants and factories
Recreation/entertainment facilities	
I1	Indoor facilities (bowling alley, gym, movie theater, swimming pool)
I2	Outdoor facilities (playing fields, golf course, swimming pool)
Housing facilities	
J1	Family housing
J2	Individual housing (BOQ, barracks, rooms)
Freight and passenger terminals	
K1	Airport/airfield (includes control tower)
K2	Rail station/yard
K3	Port/dock/wharf
K4	Vehicle terminal (bus station, truck terminal)
School facilities	
L1	Kindergarten through grade 12
L2	Army–operated technical/occupational training facilities/ classrooms (aviation/maintenance school)
L3	Non–Army–operated technical/occupational training facilities/classrooms (university/college classes)
Hobby shop	
M1	Auto hobby shop
M2	Woodworking hobby shop
M3	Other hobby shop

Table 4–4
Pay grade/Rank Codes

Grade/Code	Description
01–10	Commissioned officer
W1–W5	Warrant officer
E1–E9	Enlisted service member
GS1–GS18 & GM13–GM18	DOD civilian employee
WG1–WG18 & WS13–WS18	Wage board employee
X–1	Foreign officer, all grades
X–2	Foreign enlisted, all grades
CAC	Civilian contractor employee
CIV	Non–DOD civilian
SAC	Service academy cadets
ROTC	ROTC students
OTH	Personnel other than above

Appendix A
References

Section I
Required Publications

AR 40–21
Medical Aspects of Army Aircraft Accident Investigation

AR 385–40
Accident Reporting and Records

AR 735–11
Accounting for Lost, Damaged, and Destroyed Property

DA Pam 738–750
The Army Maintenance Management System (TAMMS)

DA Pam 738–751
Functional Users Manual for the Army Maintenance Management System, Aviation (TAMMS–A)

Section II
Related Publications

A related publication is merely a source of additional information. The user does not have to read it to understand this publication.

AR 15–6
Procedures for Investigating Officers and Boards of Officers

AR 27–40
Litigation

AR 40–5
Preventive Medicine

AR 50–5
Nuclear Surety Program

AR 50–6
Chemical Surety Program

AR 95–1
General Provisions and Flights Regulations

AR 95–30
Participation in a Military or Civil Aircraft Safety Investigation

AR 190–40
Serious Incident Report

AR 190–45
Records and Forms

AR 335–15
Management Information Control System

AR 380–86
Classification of Chemical Warfare and Chemical and Biological Defense Information

AR 385–10
Army Safety Program

AR 385–42
Investigation of NATO Nation Aircraft or Missile Accidents and Incidents

TB 43–0002–3
Maintenance Expenditure Limits for Army Aircraft

Section III
Prescribed Forms

DA Form 285
U.S. Army Accident Report. (Prescribed in para 4–2.)

DA Form 285–A–R
U.S. Army Accident Report, Index A. (Prescribed in para 4–7.)

DA Form 285–AB–R
Abbreviated Ground Accident Report. (Prescribed in para 4–11.)

DA Form 285–B–R
U.S. Army Accident Report, Index B. (Prescribed in para 4–7.)

DA Form 285–O–R
U.S. Army Accident Report, Statement of Reviewing Officials. (Prescribed in para 4–9.)

DA Form 285–W–R
U.S. Army Accident Report, Summary of Witness Interview. (Prescribed in para 4–5.)

DA Form 2397–AB–R
Abbreviated Aviation Accident Report. (Prescribed in para 3–20.)

DA Form 2397–R
Technical Report of U.S. Army Aircraft Accident, Part I—Statement of Reviewing Officials. (Prescribed in para 3–3.)

DA Form 2397–1–R
Technical Report of U.S. Army Aircraft Accident, Part II—Summary. (Prescribed in para 3–4.)

DA Form 2397–2–R
Technical Report of U.S. Army Aircraft Accident, Part III—Findings and Recommendations. (Prescribed in para 3–5.)

DA Form 2397–3–R
Technical Report of U.S. Army Aircraft Accident, Part IV—Narrative. (Prescribed in para 3–6.)

DA Form 2397–4–R
Technical Report of U.S. Army Aircraft Accident, Part V—Summary of Witness Interview. (Prescribed in para 3–7.)

DA Form 2397–5–R
Technical Report of U.S. Army Aircraft Accident, Part VI—Wreckage Distribution. (Prescribed in para 3–8.)

DA Form 2397–6–R
Technical Report of U.S. Army Aircraft Accident, Part VII, In–Flight or Terrain Impact and Crash Damage Data. (Prescribed in para 3–9.)

DA Form 2397–7–R
Technical Report of U.S. Army Aircraft Accident, Part VIII—Maintenance and Material Data. (Prescribed in para 3–10.)

DA Form 2397–8–R
Technical Report of U.S. Army Aircraft Accident, Part IX—Personal Data. (Prescribed in para 3–11.)

DA Form 2397–9–R
Technical Report of U.S. Army Aircraft Accident, Part X—Injury/Occupational Illness Data. (Prescribed in para 3–12.)

DA Form 2397–10–R
Technical Report of U.S. Army Aircraft Accident, Part XI—Personnel Protective/Escape/Survival/Rescue Data. (Prescribed in para 3–13.)

DA Form 2397–11–R
Technical Report of U.S. Army Aircraft Accident, Part XII—Weather Data. (Prescribed in para 3–14.)

DA Form 2397–12–R
Technical Report of U.S. Army Aircraft Accident, Part XIII—Fire Data. (Prescribed in para 3–15.)

DA Form 2397–13–R
Technical Report of U.S. Army Aircraft Accident, Index A. (Prescribed in para 3–16.)

DA Form 2397–14–R
Technical Report of U.S. Army Aircraft Accident, Index B. (Prescribed in para 3–16.)

Section IV
Referenced Forms

DA Form 348
Equipment Operator's Qualification Record (Except Aircraft)

DA Form 365–4
Weight and Balance Clearance

DA Forms 759, and 759–1
Individual Flight Record and Flight Certificate

DA Form 1352
Army Aircraft Inventory, Status, and Flying Time

DA Form 2173
Statement of Medical Examination and Duty Status

DA Form 2404
Equipment Inspection and Maintenance Worksheet

DA Form 2407
Maintenance Request

DA Form 2408–5
Equipment Modification Record

DA Form 2408–12
Army Aviator's Flight Record

DA Form 2408–13
Aircraft Status Information Record

DA Form 2408–13–1
Equipment Inspection and Maintenance Record

DA Form 2408–14
Uncorrected Fault Record

DA Form 2408–15
Historical Record for Aircraft

DA Form 2408–16
Aircraft Component Historical Record

DA Form 2410
Component Removal and Repair/Overhaul Record

DA Form 2408–18
Equipment Inspection List

DD Form 175–1
Flight Weather Briefing

DD Form 1322
Aircraft Accident Autopsy Report

DD Form 1323
Toxicological Examination – Request and Report

DD Form 2324
DOD Fire Incident Report

DOL Form CA–1
Federal Employee's Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation

DOL Form CA–2
Federal Employee's Notice of Occupational Disease and Claim for Compensation

DOL Form CA–16
Authorization for Examination and/or Treatment OF 346 U.S. Government Motor Vehicle Operator's Identification Card

SF 91
Operator Report on Motor Vehicle Accidents

SF 368
Quality Deficiency Report (Category II)

SF 503
Clinical Record – Autopsy Protocol

SF 543
Contributors' List of Pathologic Material

Appendix B
Explanations, Examples, and Key Words

Section I
Introduction

B–1.
These explanations and examples are provided so all users will have the same understanding of what the factors mean. Where appropriate, a list of key words is given for each factor. These keywords, when appropriate, may be used instead of the factor term.

B–2.
For ease of use, this appendix is organized as follows:

a. Table B–1. Aviation–Specific Mistakes/Errors.

b. Table B–2. Ground–Specific Mistakes/Errors. This table lists codes and explanations for ground specific errors. Mistakes/errors are organized into three groups: general, vehicle specific, and supervisory specific.

c. Table B–3. Materiel Failures/Malfunctions. Use these definitions to assist in determining what materiel failure/malfunction occurred that caused/contributed to the accident.

d. Table B–4. Environmental Conditions. Use these definitions to assist in determining what environmental conditions caused/contributed to the accident.

e. Table B–5. System Inadequacy(ies)/Root Cause(s)/Readiness Shortcomings. These explanations are provided so all users will have the same understanding of what the readiness shortcomings (root causes) for mistakes/errors, materiel failures, and environmental conditions mean.

f. Table B–6. Recommendations/Remedial Measures/Countermeasures. Note: Prefix remedial codes as follows:"U" for unit–level;

"H" for higher–level; and "A" for DA–level to indicate the level of command where the action is directed.

Table B–1
Aviation–Specific Mistakes/Errors

Code: P01
Key Word/Explanation: Scan—Failure to properly direct visual attention inside or outside the aircraft; e.g., too much or too little time on one object/area/activity; scan pattern not thorough or systematic; channelizing/fixating attention, allowing attention to be drawn away from the scanning process so that visual information important to decision making and/or aircraft control is missed and/or not acted upon.

Code: P02
Key Word/Explanation: Maintain/recover orientation—Failure to properly execute Key Word/Explanation: procedure(s) necessary to maintain or recover orientation in flight environments known to restrict visibility; e.g., fog, clouds, blowing snow/dust, and over black water or other spatial disorientation producing conditions.

Code: P03
Key Word/Explanation: Inflight planning—Failure to properly modify flight planning or procedure(s) in response to inflight events, conditions, or circumstances.

Code: P04
Key Word/Explanation: Preflight planning—Failure to choose appropriate flight options for known conditions and contingencies and develop these into a course of action to maximize probability of mission accomplishment.

Code: P05
Key Word/Explanation: Estimate distance/closure/control input—Failure to accurately judge distance between objects, rate of closure with objects, or the amount of control input required to properly maneuver aircraft (over/under control).

Code: P06
Key Word/Explanation: Detect hazards/obstacles—Failure to identify obstacles or recognize hazardous conditions; e.g., obstacles in landing area, unsecured or improperly secured equipment/cargo/PAX, improper control/switch position, crewmember or aircraft performance out of/going out of acceptable limits, adverse environmental conditions.

Code: P07
Key Word/Explanation: Diagnose/respond to emergency—Failure to properly identify and/or respond to an actual, simulated, or perceived emergency. "Properly" includes timeliness of identification and/or response as well as appropriateness of procedure(s) and/or control inputs.

Code: P08
Key Word/Explanation: Coordination—Crew/work group coordination is the interaction between crewmembers/work group members (communication) and actions (sequence or timing) necessary for tasks to be performed efficiently, effectively, and safely. [1]

Code: P09
Key Word/Explanation: Failed to use or follow list(s) to perform before/during/after operations/inspections of aircraft/equipment.

Code: P10
Key Word/Explanation: Failed to follow maintenance manual (TM, SOP, etc.) instructions in servicing aircraft/equipment.

Code: P11
Key Word/Explanation: Failed to follow proper instructions (TM, TB, MWO, etc.) while repairing/installing/adjusting equipment/component/part.

Code: P12
Key Word/Explanation: Inspection—Inadequately/improperly inspected aircraft/equipment to determine its operational readiness; (for example, failed to search for/detect hazards). [2]

Code: P13
Key Word/Explanation: Failed to read/follow SOPs, notices, ARs, general rules/principles etc., to get needed information for job performance, or knowingly violates Ars, SOPs, rules, etc.

Code: P14

Table B–1
Aviation–Specific Mistakes/Errors—Continued

Key Word/Explanation: Inadequate tool/equipment accountability. Failed to maintain strict equipment accountability, such as for tools and cleaning materials (for self or others).

Code: P15
Key Word/Explanation: Failed to secure materiel/equipment/cargo subject to being blown or thrown about/damaged by wind/rotorwash/turbulence/crash forces; e.g., ground equipment, pads, TA–50, ammunition, tool chests, medical equipment, etc.

Code: P16
Key Word/Explanation: Inadequately/improperly selected LZ/termination point; e.g., size, obstacles/environmental hazards/aircrew experience.

Code: P17
Key Word/Explanation: Improperly prepared LZ; e.g., type/placement of landing markers/ detection/removal of obstacles/hazards.

Code: P18
Key Word/Explanation: Improper mix/match/number of personnel for job/mission (level of proficiency/fatigue, etc.).

Code: P19
Key Word/Explanation: Inadequate time allowed for pre–mission preparation. Set mission launch time which did not allow adequate pre–mission preparation.

Code: P20
Key Word/Explanation: Set/permitted inappropriate mission launch time for environmental/weather conditions.

Code: P21
Key Word/Explanation: Permitted inappropriate selection of LZ/touchdown or termination point for aircrew experience/level of training intended.

Code: P22
Key Word/Explanation: Failed to ensure repairs, services, modifications, installations, or maintenance such as lubrication/inspection, etc., were completed IAW appropriate TMs, SOPs, etc.

Code: P23
Key Word/Explanation: Failed to take appropriate/timely actions to prevent or stop violations of safe operations/procedures.

Code: P24
Key Word/Explanation: Inadequate mission planning, e.g. risk management, operational and logistical decisions.

Code: P25
Key Word/Explanation: Failed to brief/provide information, adequate for mission accomplishment.

Code: P97
Key Word/Explanation: Insufficient information to determine mistake/error

Notes:
[1] Coordination actions are further explained as:
a. Direct/request assistance—Failure to properly direct or request assistance from non–flying crewmembers (e.g.,provide information on airspeed, altitude, engine; or assist with aircraft clearance and control; failure to request assistance from more experienced co–worker in making complex repair for first time).
b. Announce decision/action—Failure to announce decision or action that affects other crewmembers'/work group member duties.
c. Positive communication—Lack of positive communication (transmission, acknowledgment, confirmation) using standard terminology with specific qualifiers.
d. Assign responsibilities—Failure of ABC, AMC, AUC, FCO, IP or other supervisor to properly assign responsibilities.
e. Offer assistance—Failure to offer assistance or information requested or needed by the flying pilot/work group members.
f. Action sequence—Improper sequencing or timing of actions. Crewmember/workgroup member initiated action before clearance to do so.

[2] Inspection actions should also cover the following deficiencies:
a. Access panel latches not serviceable/fastened
b. Tools left in improper places, FOD, etc.
c. Bearings not lubricated
d. Damage to equipment

Table B–2
Ground Specific Mistakes/Errors

GENERAL

Code: 01
Key Word/Explanation: Inadequate planning as follows: failed to properly assign duties/personnel; failed to properly coordinate; or failed to properly organize.

Code: 02
Key Word/Explanation: Improperly/failed to lock/block/secure; e.g., load.

Code: 03
Key Word/Explanation: Inadequate inspection/check of vehicle or equipment (before operation, during operation, or after operation).

Code: 04
Key Word/Explanation: Failed to use required safety equipment/ device/guard/sign/signal.

Code: 05
Key Word/Explanation: Operating while fatigued when not necessary/ directed.

Code: 06
Key Word/Explanation: Improper use of equipment as follows: (did not use equipment when required; used right equipment but improperly; used wrong equipment for task.

Code: 07
Key Word/Explanation: Improper lifting: (used incorrect lifting technique; or failed to use appropriate assistance).

Code: 08
Key Word/Explanation: Failed to take appropriate precautions for adverse environmental conditions (rain, haze, fog, snow, ice, reduced visibility).

Code: 09
Key Word/Explanation: Improper body position: (hazardous position, awkward position, or unprotected position in sleeping/eating, etc).

Code: 10
Key Word/Explanation: Improperly walked/ran/climbed.

Code: 11
Key Word/Explanation: Failed to stay alert or attentive to what was happening (situational awareness to environment/conditions/ operations).
a. Failed to pay attention.
b. Improperly divided attention.
c. Improperly monitored.
d. Improperly scanned.

Code: 12
Key Word/Explanation: Failed to ensure adequate clearance/space (enough room) for operation.

Code: 13
Key Word/Explanation: Misjudged clearance (improperly estimated/ evaluated).

Code: 14
Key Word/Explanation: Improper weapons handling: (i.e., improper sighting/aiming/firing/throwing; unauthorized use/handling; improper carrying/lifting/transporting; improper clearing/disarming/unloading; and improper assembling/cleaning/disassembling.

Code: 15
Key Word/Explanation: Improper handling of pyrotechnics/explosives.

Code: 16
Key Word/Explanation: Incorrectly pulled/pushed equipment/material.

Code: 17
Key Word/Explanation: Failed to firmly grip/hold equipment/material.

Code: 18
Key Word/Explanation: Inadequate crew coordination/communication. Crew coordination is the interaction between crewmembers (communication) and actions (sequence or timing) necessary for tasks to be performed efficiently, effectively, and safely.
a. Improper action sequence. Improper sequencing or timing of actions with other crewmembers; e.g., vehicle driver initiated vehicle movement before receiving senior occupant's order to do so.

Table B–2
Ground Specific Mistakes/Errors—Continued

b. Failure to offer assistance/information/ warning requested or needed by another crewmember; e.g., driver failed to warn other crewmembers of impending hazard (large over–hanging tree limb).
c. Lack of positive communication (transmission, acknowledgment, confirmation) using standard terminology with specific qualifiers; e.g., tank commander failed to confirm crewmembers were clear before traversing turret.
d. Failure to announce decision/action that affects other crewmembers' duties; e.g., occupant failed to announce to driver his decision to dismount vehicle during momentary halt.
e. Failure to direct/request assistance from other crewmember(s); e.g., although neither track commander (TC) nor driver could see, TC failed to direct a crewmember to dismount and act as ground guide.
f. Failure to assign responsibilities. Failure of leader to assign responsibilities before or during the mission.
(Codes 20 through 39 reserved for future use.)

VEHICLE/EQUIPMENT SPECIFIC

Code: 40
Key Word/Explanation: Excessive speed (excessive speed for weather/road conditions; exceeding posted/specified limits; and excessive for vehicle design/load).

Code: 41
Key Word/Explanation: Improper passing (such as, misjudged clearance while passing; passed at unsafe place or time; failed to take appropriate precautions when passing pedestrians.

Code: 42
Key Word/Explanation: Improper turning as follows:
a. Failed to yield right–of–way while turning.
b. Over–steering in turn.
c. Improper U–turn.

Code: 43
Key Word/Explanation: Failed to yield right–of–way (other than while turning).

Code: 44
Key Word/Explanation: Failed to stop at controlled intersection.

Code: 45
Key Word/Explanation: Improperly stopped/parked.

Code: 46
Key Word/Explanation: Improper backing

Code: 47
Key Word/Explanation: Failed to use ground guide when required.

Code: 48
Key Word/Explanation: Ground guide used improper/incorrect position, signal, or procedure.

Code: 49
Key Word/Explanation: Following too close for environmental conditions or vehicle speed/design.

Code: 50
Key Word/Explanation: Driving in wrong lane.

Code: 51
Key Word/Explanation: Improper lane change.

Code: 52
Key Word/Explanation: Improper braking
a. Improper foot placement on pedal.
b. Too much or too little pressure.
c. Applied too soon or too late.

Code: 53
Key Word/Explanation: Improperly shifted gears on vehicle/equipment.

Code: 54
Key Word/Explanation: Abrupt control/steering response (except while turning).

Code: 55
Key Word/Explanation: Improperly mounted/dismounted vehicle/ equipment.

Code: 56

Table B–2
Ground Specific Mistakes/Errors—Continued

Key Word/Explanation: Operated vehicle/equipment with known malfunction/unsafe mechanical condition.
(Codes 57–74 reserved for future use.)

SUPERVISOR SPECIFIC

Code: 75
Key Word/Explanation: Improper personnel selection/assignment:
a. Inexperienced.
b. Untrained.
c. Unlicensed.
d. Impaired; e.g., fatigued.

Code: 76
Key Word/Explanation: Knowingly allowing equipment operator to violate procedures.

Code: 77
Key Word/Explanation: Failure to ensure proper positioning of personnel prior to vehicle/equipment operation.

Code: 78
Key Word/Explanation: Failure to brief/provide information.

Code: 97
Key Word/Explanation: Insufficient information to determine mistake/error.

Table B–3
Materiel Failures/Malfunctions

Code: M01
Key Word/Explanation: Overheated/burned/melted. Key words: blister, boil, carbonize, char, flame, fuse or glaze. Excessive heat caused materiel or equipment to fail or malfunction.

Code: M02
Key Word/Explanation: Froze (temperature). Key words: congeal or solidify. Excessive cold caused materiel/equipment to fail/malfunction.

Code: M03
Key Word/Explanation: Obstructed/pinched/clogged. Key words: block, crimp, or restrict. Function of materiel or equipment was hindered or completely cut off by an obstacle.

Code: M04
Key Word/Explanation: Vibrated. Key words: oscillate or shake. Side–to–side or forward–and–back movement of materiel or equipment caused it to fail or malfunction.

Code: M05
Key Word/Explanation: Rubbed/worn/frayed. Key words: abrade, chafe, fret, groove, score, or scrape. Friction–producing movement was applied to materiel or equipment to such an extent that it failed or malfunctioned.

Code: M06
Key Word/Explanation: Corroded/rusted/pitted. Key words: erode or oxidize. Gradual wearing away (usually by chemical action) of materiel or equipment to such an extent that it failed or malfunctioned.

Code: M07
Key Word/Explanation: Overpressured/burst. Key words: balloon, bulge, explode, rupture, or swell. Steady or abrupt force was applied over the surface of materiel or equipment to such an extent that it failed or malfunctioned.

Code: M08
Key Word/Explanation: Pulled/stretched. Key word: elongate. Steady or abrupt force applied to material or equipment caused it to move toward the force, in whole or in part, to such an extent that if failed or malfunctioned.

Code: M09
Key Word/Explanation: Twisted/torqued. Key word: turn. Steady or abrupt application of twisting forces caused materiel or equipment to fail or malfunction.

Code: M10

Table B–3
Materiel Failures/Malfunctions—Continued

Key Word/Explanation: Compressed/hit/punctured. Key words: chip, collapse, crush, dent, nick, pinch, press. Steady or abrupt application of force that presses/impacts materiel or equipment causing it to fail or malfunction.

Code: M11
Key Word/Explanation: Bent/warped. Key words: bow or buckle. Changing materiel or equipment from an original straight, level, or even condition through the application of force to such an extent that it failed or malfunctioned.

Code: M12
Key Word/Explanation: Sheared/cut. Key words: chop or sever. Failure or malfunction was caused by steady or abrupt force applied to materiel, resulting in a break with the two parts sliding parallel to each other in different directions.

Code: M13
Key Word/Explanation: Decayed/decomposed. Key words: mildew, rot, or spoil. Chemical or biological action resulted in a gradual decline in materiel or equipment strength to such an extent that if failed or malfunctioned.

Code: M14
Key Word/Explanation: Electric current action. Key words: short, arc, fusing, grounding, amperage, voltage, surge. Action of electric current caused materiel or equipment to fail or malfunction.

Code: M97
Key Word/Explanation: Insufficient information to determine type of failure.

Table B–4
Environmental Conditions

Code: E01
Key Word/Explanation: Illumination. Key words: bright, dark, dim, glare, or light. Too much or too little light that was a negative influence on vision.

Code: E02
Key Word/Explanation: Precipitation. Key words: condensation, fog, frost, hail, ice, mist, rain, sleet, or snow. Climatic precipitation that has a negative influence on human or machine performance.

Code: E03
Key Word/Explanation: Contaminants. Key words: carbon dioxide, carbon monoxide, chemicals, dust, foreign objects/debris, fumes, gases, impurities, mists, smog, smoke, toxic materials, or vapors. Natural or manmade elements that render material or the environment unsatisfactory for human or machine use and have a negative influence on performance.

Code: E04
Key Word/Explanation: Noise. Key words: bang, din, explosion, shout, or static. Unwanted sound that produces hearing loss, disturbs/distracts attention from task at hand, or interfered with communication.

Code: E05
Key Word/Explanation: Temperature/humidity. Key words: burn, chill, cold, freeze, heat, hot, numb, scald, scorch, or steam. Extremes of heat, cold, and humidity that have a negative influence on human or machine performance.

Code: E06
Key Word/Explanation: Wind/turbulence. Key words: blow, blast, gust, hurricane, storm, tornado, or turbulence. Natural or manmade air movement that has a negative influence on human or machine performance.

Code: E07
Key Word/Explanation: Vibration. Key words: bounce, buck, bump, jar, jolt, jump, oscillate, roll, shake, vibrate, shimmy, or sway. Repeated/periodic motions that have a negative influence on human or machine performance.

Table B–4
Environmental Conditions—Continued

Code: E08
Key Word/Explanation: Acceleration/deceleration. Forces experienced by personnel/materiel due to rate of change of velocity.

Code: E09
Key Word/Explanation: Radiation. Key words: alpha radiation, beta radiation, gamma radiation, ionizing, laser, maser, neutron radiation, non–ionizing, radio waves, sunlight, ultraviolet, or X radiation. Radiant energy emitted in waves or particles that have a negative influence on human or machine performance.

Code: E10
Key Word/Explanation: Work surface/space. Key words: holes, inclines, rocky, rough, rutted, slippery, steep, or uneven wave action. Conditions (excluding precipitation) of natural or manmade work surfaces on which personnel and machines operate that have a negative influence on performance.

Code: E11
Key Word/Explanation: Air pressure. Key words: altitude, bends, blast, boom, chokes, decompression, explosion, or hypoxia. Sudden or gradual changes in air pressure that have a negative influence on human or machine performance.

Code: E12
Key Word/Explanation: Electricity. Key words: burn out, electrocute, discharge, ground, lightning, shock, short, or static. Natural or manmade electrical current that has a negative influence on human or machine performance.

Code: E13
Key Word/Explanation: Animals. Key words: bitten, burrowed, chewed, clawed, infects, infested, pecked, poisoned, scratched, stung, flew into. The actions or presence of animals that injures personnel, cause personnel to make errors, damage equipment, or cause equipment to malfunction.

Code: E97
Key Word/Explanation: Insufficient information to identify environmental conditions.

Table B–5
System Inadequacies/Readiness Shortcomings/Root Causes

LEADER FAILURE

Code: 01
Key Word/Explanation: Inadequate/improper supervision by higher command.

Code: 02
Key Word/Explanation: Inadequate/improper supervision by staff officer.

Code: 03
Key Word/Explanation: Inadequate/improper supervision by unit command.

Code: 04
Key Word/Explanation: Inadequate/improper supervision by direct supervisor/noncommissioned officer in charge/platoon leader/instructor. NOTE: Inadequate supervision becomes a root cause when it leads to accident–causing personnel mistakes or materiel failure/malfunctions. Inadequate supervision is more clearly identifiable at the immediate–supervisor level.

TRAINING FAILURE

Code: 05
Key Word/Explanation: Inadequate school training. School training becomes a root cause when people make accident–causing mistakes because the school training was inadequate in content or amount.

Code: 06
Key Word/Explanation: Inadequate unit/on–the–job training. Unit/on–the–job training becomes a root cause when people make accident–causing mistakes because the training provided was inadequate in content or amount.

Table B–5
System Inadequacies/Readiness Shortcomings/Root Causes—Continued

Code: 07
Key Word/Explanation: Inadequate experience. Supervised on–the–job experience is the follow–up to school and unit training programs. Experience becomes a root cause when people make accident–causing mistakes because the experience provided was inadequate in content or amount.

Code: 08
Key Word/Explanation: Habit interference becomes a root cause when a person makes an accident–causing error because task performance was interfered with either the way he usually performs similar tasks, or the way he usually performs the same task under different conditions or with different equipment.

STANDARDS FAILURE

Code: 09
Key Word/Explanation: Inadequate written procedures for operation under normal or abnormal/emergency conditions. Inadequate written procedures (AR, TM, FM, SOP, written directives) become the root causes when they lead to accident–causing mistakes or materiel failures/malfunctions.

SUPPORT FAILURE

Code: 10
Key Word/Explanation: Inadequate facilities/services. Inadequate facilities or services become root causes when the maintenance, space and/or support provided for personnel and materiel to accomplish their functions cause mistakes or failures/malfunctions that lead to accidents. (Examples of facilities or services are recreation areas, POL services, housing, medical clinics/hospitals, weather services, storage areas, maintenance facilities, and property disposal.)

Code: 11
Key Word/Explanation: Inadequate/improper equipment design or equipment not provided. Improperly designed equipment and materiel or lack of equipment/materiel become root causes when the design or lack of equipment leads to accident–causing personnel errors or materiel failures/malfunctions.

Code: 12
Key Word/Explanation: Insufficient number or type of personnel. Insufficient number or type of personnel becomes a root cause when people make accident–causing mistakes or materiel fails/malfunctions because the number or type of personnel provided was insufficient.

Code: 13
Key Word/Explanation: Inadequate quality control, manufacture, packaging, or assembly. The inadequate manufacture, assembly, packaging, or quality control of materiel becomes a root cause when it leads to accident–causing personnel errors or materiel failures/malfunctions. (Note: Includes original manufacture and rebuild.)

Code: 14
Key Word/Explanation: Inadequate maintenance. Inadequate maintenance (inspection, installation, troubleshooting, recordkeeping, etc.) becomes a root cause when it leads to accident–causing personnel errors or materiel failures/malfunctions.

INDIVIDUAL FAILURE

Code: 15
Key Word/Explanation: Fear/Excitement/Anger (inadequate composure). Each person is a part of the system. Therefore, his state of mind is a system element. Inadequate composure is a temporary state of mind that becomes a root cause when a person makes an accident–causing error because of fear, excitement, or some related emotional factor made clear, rational thought impossible.

Code: 16
Key Word/Explanation: Overconfidence/complacency in abilities. Overconfidence is a temporary state of mind that becomes a root cause when an accident is caused by a person's unwarranted reliance on: his own ability to perform a task, the ability of someone else to perform a task, the performance capabilities of equipment or other materiel.

Code: 17
Key Word/Explanation: Lack of confidence. Lack of confidence is a

Table B–5
System Inadequacies/Readiness Shortcomings/Root Causes—Continued

temporary of mind that becomes a root cause when an accident is caused by a person's unwarranted lack of reliance on: his own ability to perform the task, the ability of someone else to perform the task, the performance capabilities of equipment or other materiel.

Code: 18
Key Word/Explanation: Haste/Attitude (poor motivation). Haste/attitude (poor motivation) is a temporary state of mind that becomes a root cause when a person makes an accident–causing mistake because he/she is in a hurry (haste), or has a poor/bad attitude.

Code: 19
Key Word/Explanation: Fatigue (self–induced). Fatigue is a temporary physical and/or mental state that becomes a root cause when a person makes an accident–causing error because of reduced physical or mental capabilities resulting from previous activity and/or lack or rest.

Code: 20
Key Word/Explanation: Effects of alcohol, drugs, illness. The temporary effects of alcohol, drugs, or illness become a root causes when a person makes an accident–causing error because of reduced physical or mental capabilities resulting from one or more of these effects.

Code: 21
Key Word/Explanation: Environment conditions. Unknown or unavoidable conditions, which result in materiel failure or induce human error.

Code: 97
Key Word/Explanation: Insufficient information to determine system inadequacy/cause.

Table B–6
Recommendations/Remedial Measures/Countermeasures

Code: 01
Key Word/Explanation: Improve school training. The improvement recommended should be directed toward the content or amount of school training needed to correct the accident–causing error. For example:
a. Provide school training for the person who made the error due to not being school trained.
b. Improve the content of a school training program to better cover the task in which the error was made.
c. Expand the amount of school training given on the task in which the error was made.

Code: 02
Key Word/Explanation: Improve unit training. The improvement recommended should be directed toward the content or amount of unit training needed to correct the accident–causing error. For example:
a. Provide unit training for the person who made the error due to not being unit trained.
b. Improve the content of unit training to better cover the task in which the error was made.
c. Expand the amount of unit training given on the task in which the error was made.

Code: 03
Key Word/Explanation: Revise procedures for operation under normal or abnormal/emergency conditions. The changes recommended should be directed toward changing existing procedures or including new ones. If the change is to an AR, TM, FM, Soldiers Manual, or other Army publication, tell the date when DA Form 2028 was submitted.

Code: 04
Key Word/Explanation: Ensure personnel are ready to perform. The purpose of this recommendation is to encourage supervisors to make sure that their people are capable of performing a job before making an assignment. They should consider training, experience, physical condition, and psycho–physiological state (e.g., fatigue, haste, excessive motivation, overconfidence, effects of alcohol/drugs).

Table B–6
Recommendations/Remedial Measures/Countermeasures—Continued

Code: 05
Key Word/Explanation: Inform personnel of problems and remedies. This recommendation should be used when it is necessary to relay accident–related information to people at unit, installation, MACOM, or DA levels.

Code: 06
Key Word/Explanation: Positive command action. The purpose of this corrective action is to recommend that the supervisor take action to encourage proper performance and discourage improper performance by his people.

Code: 07
Key Word/Explanation: Provide personnel resources required for the job. This recommendation is intended to prevent an accident caused by not enough qualified people being assigned to perform the job safely.

Code: 08
Key Word/Explanation: Redesign (or provide) equipment or materiel. This recommendation is made when equipment or materiel caused or contributed to an accident because:
a. The required equipment or materiel was not available.
b. The equipment or materiel used was not properly designed.

Code: 09
Key Word/Explanation: Improve (or provide) facilities or services. This recommendation is made when facilities or services lead to an accident because—
a. The required facilities or services were not available.
b. The facilities or services used were inadequate.

Code: 10
Key Word/Explanation: Improve quality control. This recommendation is directed primarily toward the improvement of training, manufacturing, and maintenance operations where poor quality products (personnel or materiel) have led to accidents.

Code: 11
Key Word/Explanation: Perform studies to get solution to root cause. This recommendation should be made when corrective actions cannot be determined without special study. Such studies can range from informal efforts at unit level to highly technical research projects performed by DA–level agencies.

Appendix C
Crash Survival Charts and Figures

C–1. Instructions

This appendix contains charts and figures to assist in computing crash forces relative to the aircraft, its components, and occupants.

C–2. The following information is provided for crash survival:

a. A chart depicting the relationship of velocity of impact and declarative distance to force (fig C–1).

b. A chart indicating the relationship of velocity of impact and declarative distance to force (fig C–2).

c. An illustration of human tolerable declarative force limits (fig C–3).

d. Six illustrations of human extremity strike envelopes (figs C–4 through C–9).

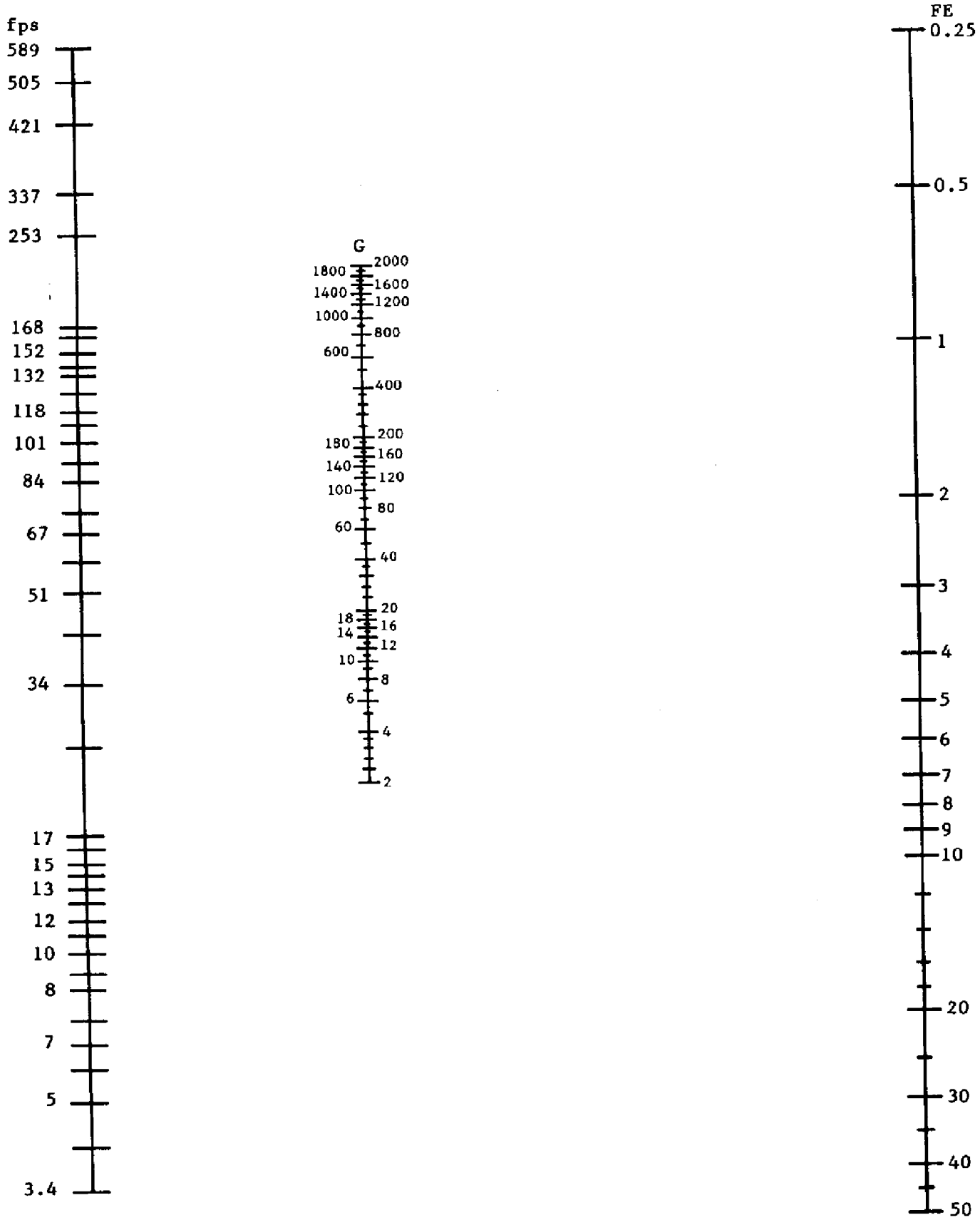


Figure C-1. Relationship of velocity of impact and declarative distance to force

	Transmission & Rotor			Engine			Seats			Landing Gear
Aircraft	N_x	N_y	N_z	N_x	N_z	N_x	N_y	N_z	N_z	Sink Rate
AH-1	±8	±8	±8	±15	±5	±15	+15 −5	±15	±15	8-10 fps
OH-58	±16	±8	±16	±16	±8	±16	±20	+10	±20	10-15 fps
UH-1	±8	±8	±8	±8	±1.5	±8	±15** −5	±15**	+15** −7.5	8-10 fps
UH-60	±20	±18	+20 −10	±20	±18	±20 -10	+20 −12	+10	+25 −8	20 fps
AH-64	±20	±18	+20 −10	±20	±18	+20 −10	+20 −12	±10	±25 −8	30 fps
CH-47	+8	±8	±8	±8	±8	±8	±8	±8	±8	A&B 8.2 fps C 6.0 fps
CH-54	±10	±5	±10	±10	±5	±10	±10	±5	±10	9.8-12 fps
OH-6	±17	±15	±17	±20	±6	±12	±20	±10	±20	15 fps

* N0 failure occurs
** Unarmored seats

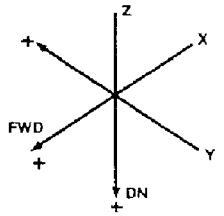
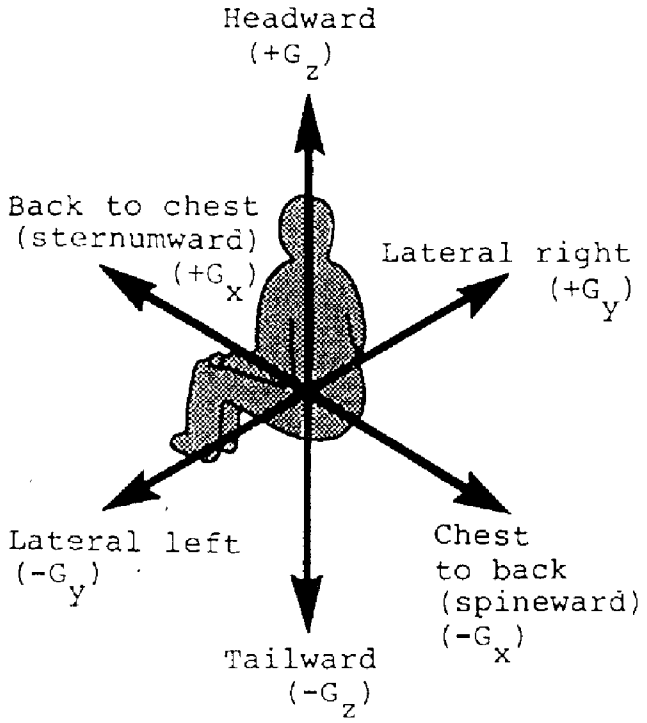


Figure C-2. Aircraft Design* Load Factors and Landing Sink Rates



Direction of
decelerative force

Vertical	Limits
Headward - Eyeballs-down	20G
Tailward - Eyeballs-up	15G
Transverse	
Lateral right - Eyeballs-left	20G
Lateral left - Eyeballs-right	20G
Back to chest - Eyeballs-in	45G
Chest to back - Eyeballs-out	45G

Note:

The accelerative force on the body acts in the same direction as the arrows.

Figure C-3. Army servicemember during typical crash impacts. The values shown are for no serious injury

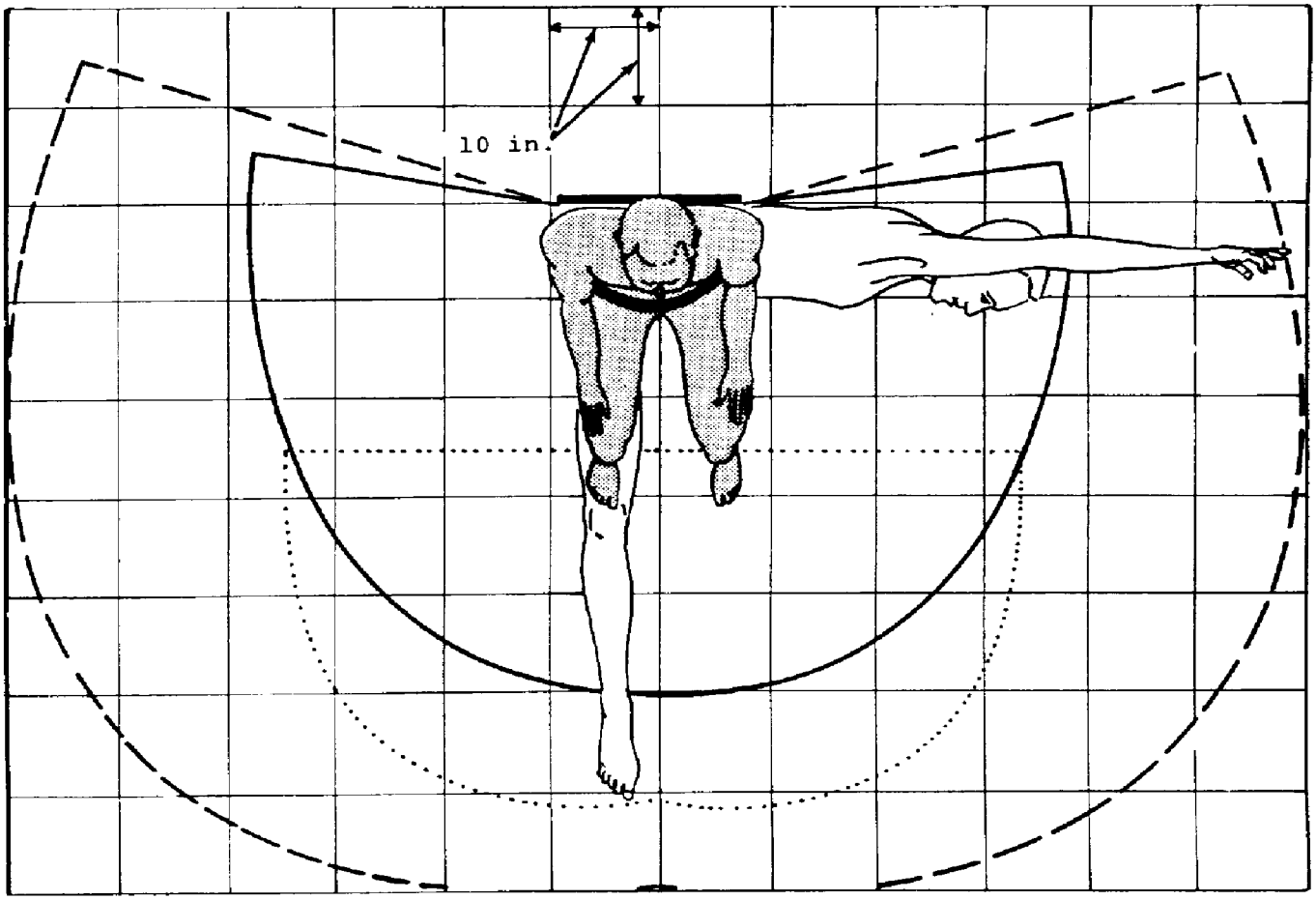


Figure C-4. Lap Belt–Only Extremity Strike Envelope—Top View

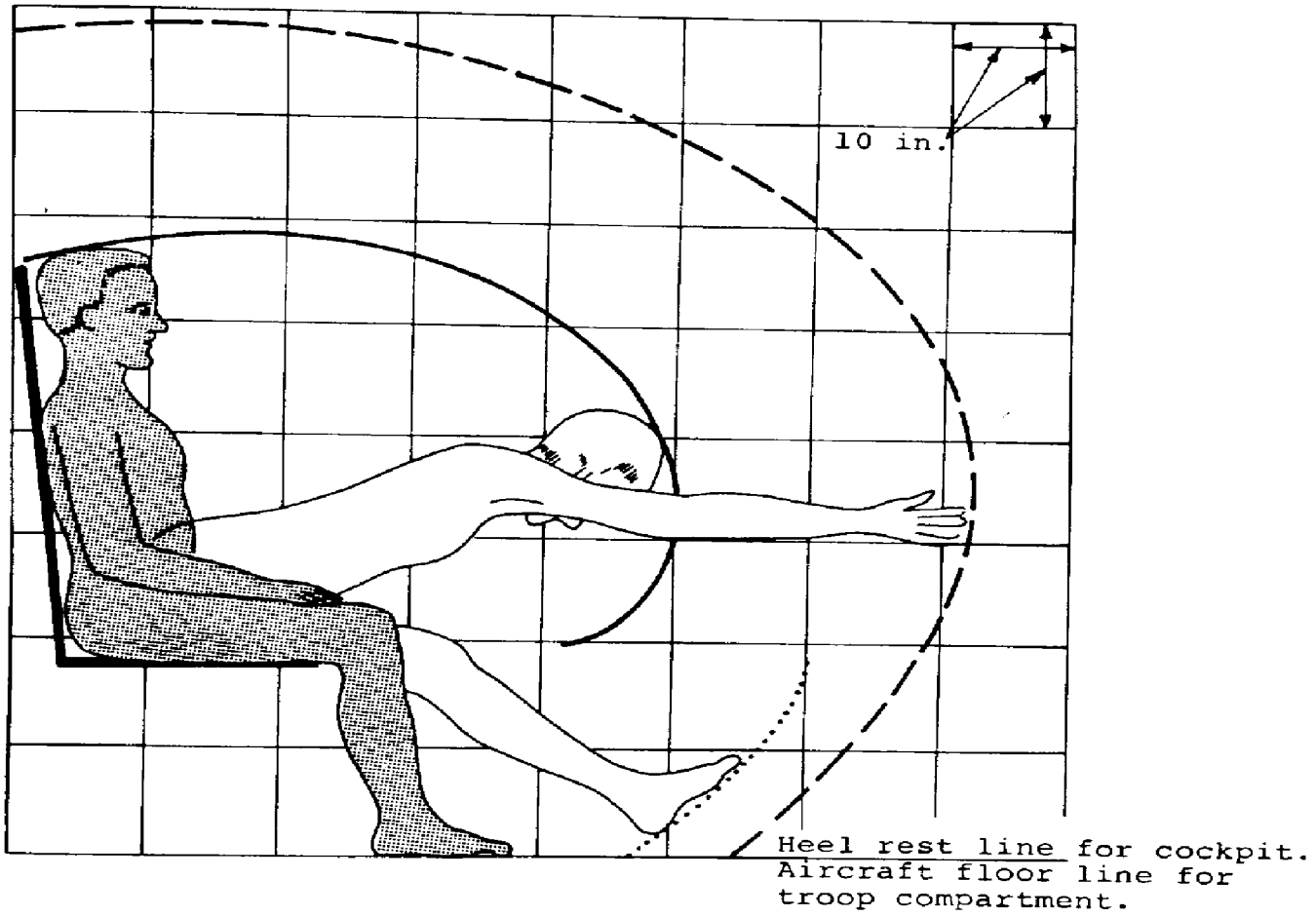


Figure C-5. Lap belt–only extremity strike envelope—side view

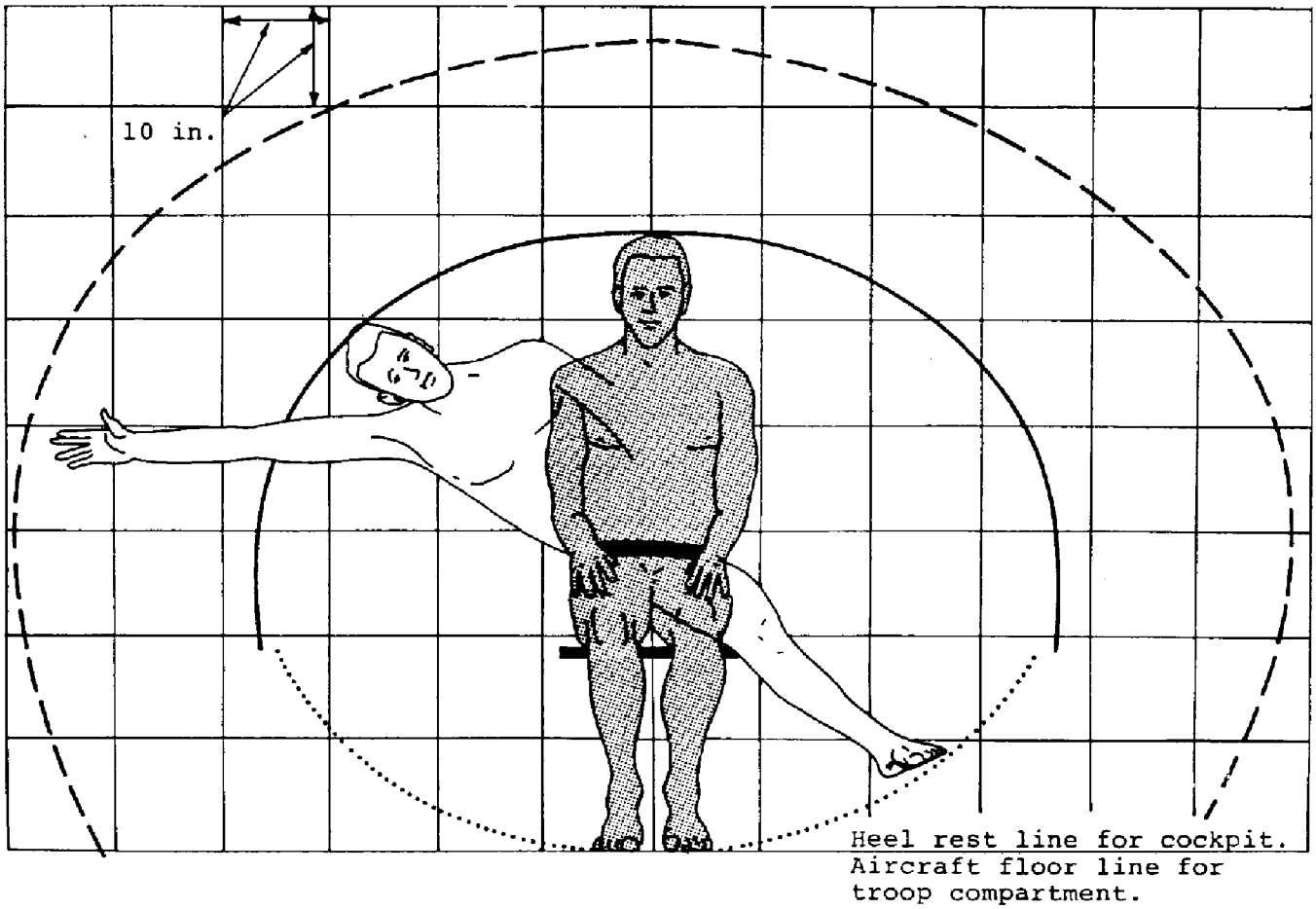


Figure C-6. Lap belt–only extremity strike envelope—front view

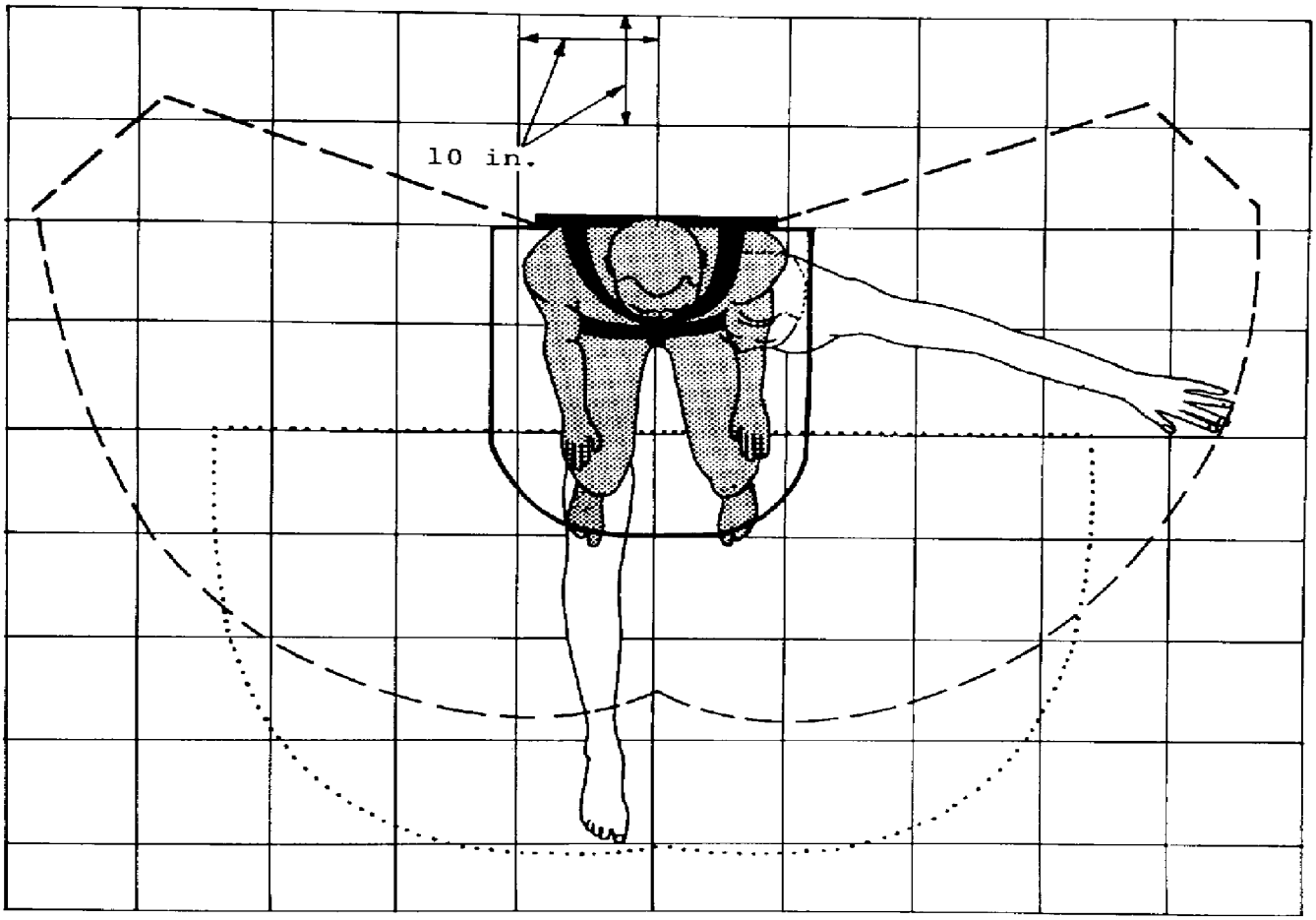


Figure C-7. Full–restraint extremity strike envelope—top view

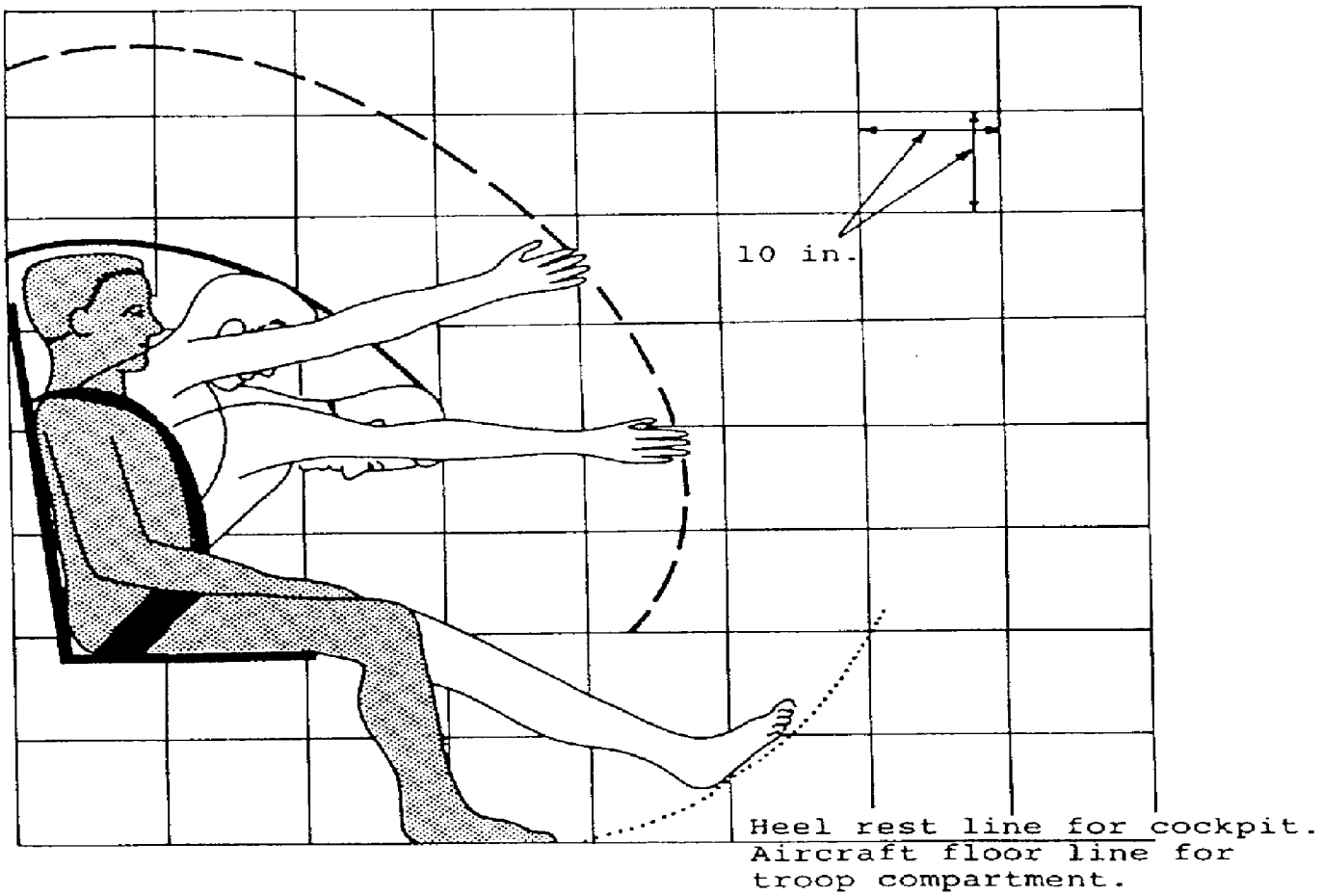


Figure C-8. Full–restraint extremity strike envelope—side view

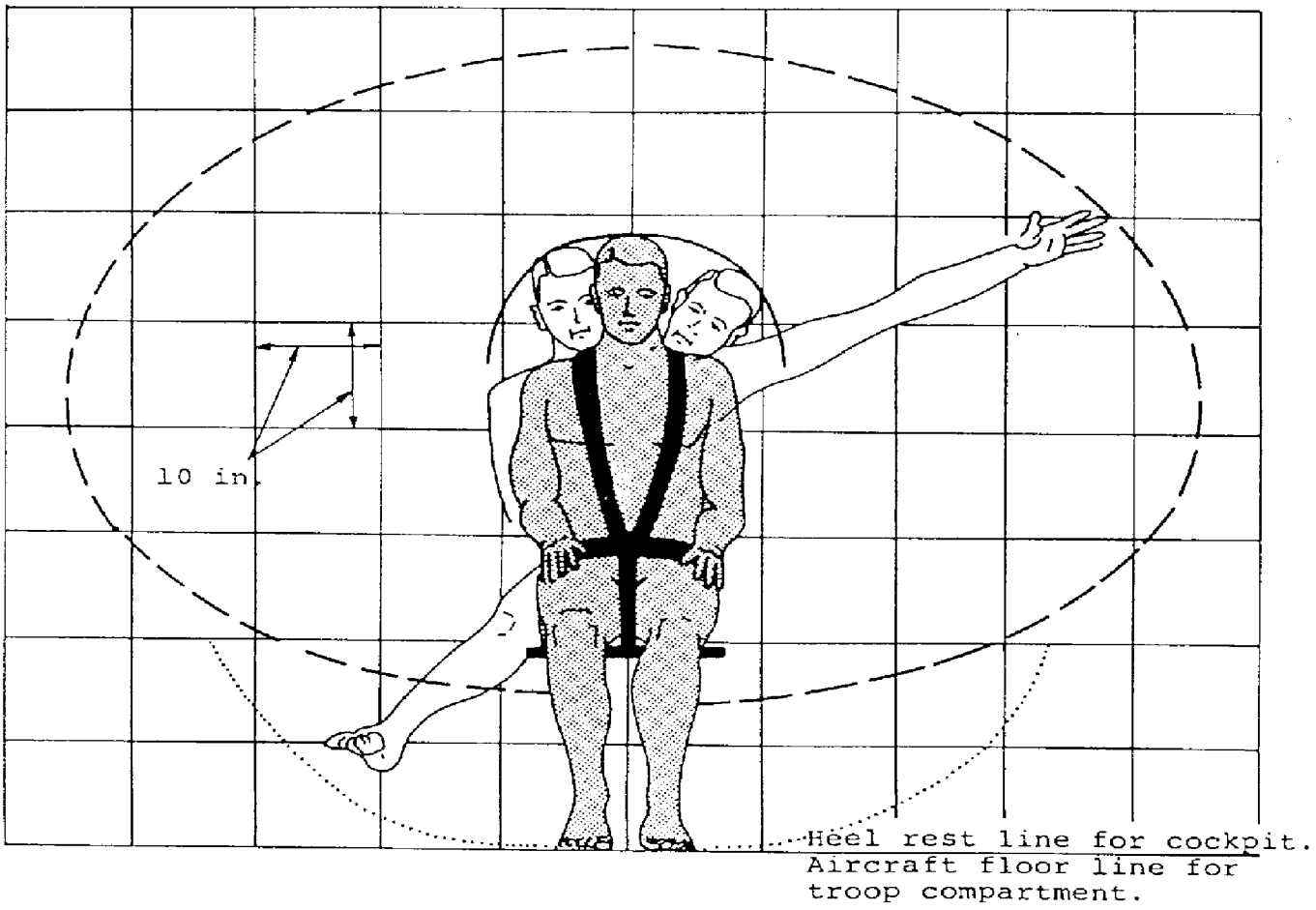


Figure C-9. Full–restraint extremity strike envelope—front view

Appendix D
Basic Examples of Fractures and Damaging Stresses

D–1. Metal fatigue

When metal is subjected to excessive, continuous stress, overload, or excessive, continuous stress, overload, or excessive vibration over a period of time, the ability of the metal to withstand established stress limitations progressively decreases. Such a condition is called metal fatigue and can result in metal fracture, shear, or warp.

a. An example of metal fatigue failure is shown in figure D–1. The area of instantaneous failure will indicate the overstress placed on the fracture. If the area of instantaneous failure is larger in relation to the total area of failure, high overstress is indicated; if lower, a low overstress is indicated. Stop marks radiate outward from the origin of the failure. If the stop marks remain convex about the origin of the failure, low stress concentration is indicated; concave stop marks indicate a high stress concentration.

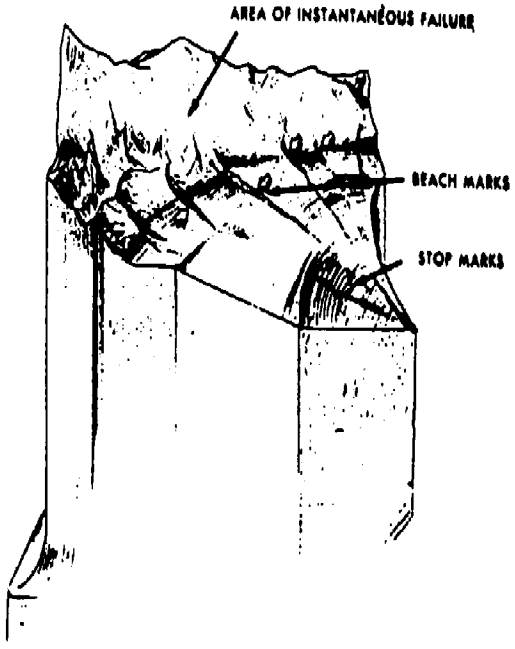


Figure D-1. Metal fatigue

b. Types of metal fatigue failures are shown in figure D–2 and illustrate—

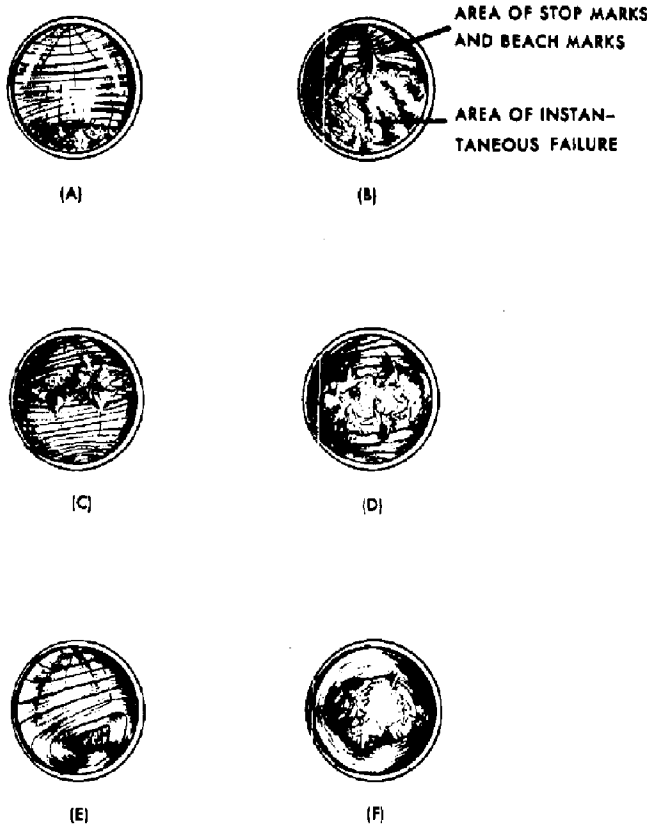


Figure D-2. Fatigue fractures

(1) One–way bending (A, fig D–2) with low overstress indicated by large area of beach marks and stop marks, and high stress concentration indicated by reversal of stop marks.

(2) One–way bending (B, fig D–2) with high overstress indicated by small area of beach marks and stop marks, and high stress concentration indicated by reversal of stop marks.

(3) Two–way bending (C, fig D–2) with low overstress indicated by large area of beach marks and stop marks, and high stress concentration indicated by reversal of stop marks.

(4) Two–way bending (D, fig D–2) with high overstress indicated by small area of beach marks and stop marks, and high stress concentration indicated by reversal of stop marks.

(5) Reversed bending and rotation (E, fig D–2) with low overstress indicated by large area of beach marks and stop marks, and high stress concentration indicated by reversal of stop marks.

(6) Reversed bending and rotation (F, fig D–2) with high overstress indicated by large area of instantaneous failure.

c. Propagation of fatigue at right angle to tension stress lines and ductile–type failure of instantaneous zone is shown in figure D–3.

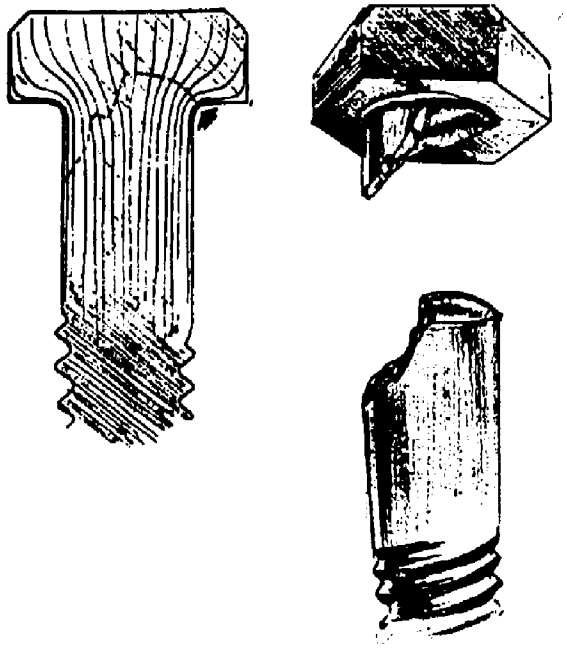


Figure D-3. Propagation of fatigue crack and ductile–type failure of instantaneous zone

d. Fatigue failure with no evidence of stress concentration and high stress concentration is shown in figure D–4.

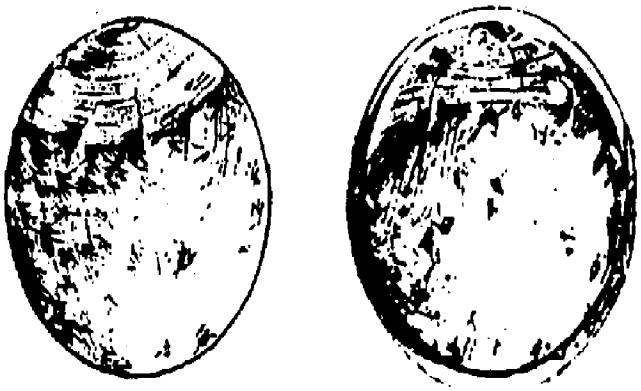


Figure D-4. Fatigue failure, no stress and high stress concentration

e. Fatigue failure under torsion loading is illustrated at 45 degrees spiral with the shaft axis as shown in Figure D–5.

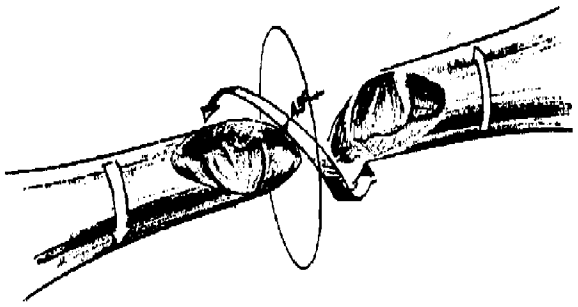


Figure D-5. Fatigue failure under torsion loading

D–2. Torsion and bending load failures

Examples of thin–wall tube failure due to bending and torsion loading are shown in figures D–6 and D–7. Examples of deformation and fracture due to tension and compression are shown in figure D–8.

Figure D-6. Torsion load failure

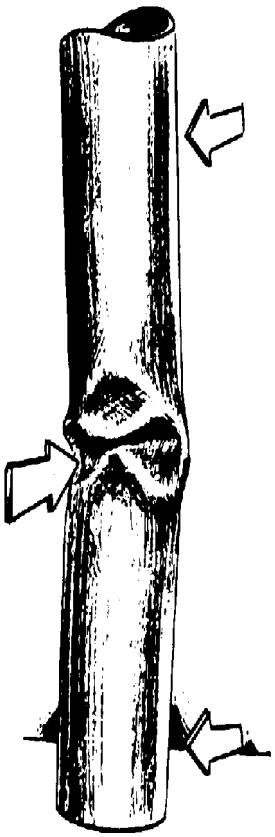
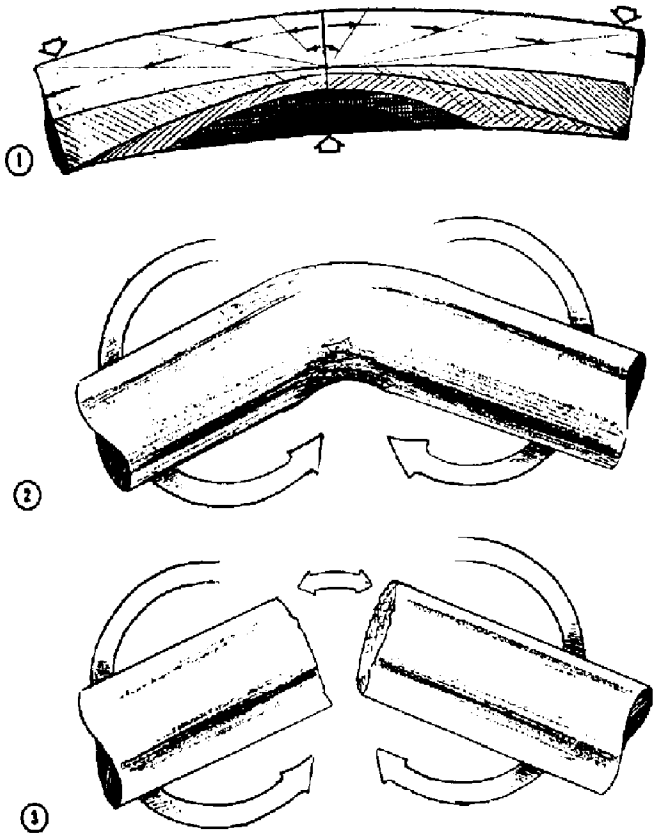


Figure D-7. Bending load failure



1. Tension and compression areas.
2. Permanent deformation (ductile metal).
3. Fracture (brittle metal).

Figure D-8. Deformation and fracture due to tension and compression

D–3. Tension load failure characteristics

Examples of tension load failure characteristics are shown in figures D–9 and D–10.

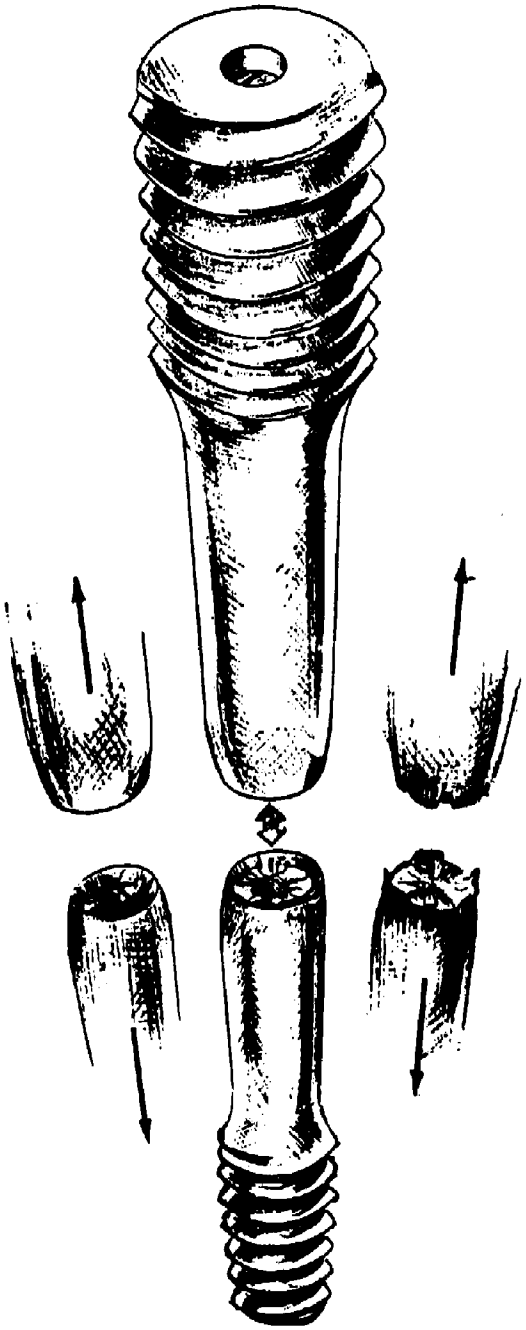


Figure D-9. Failure characteristics of ductile mental due to tension load

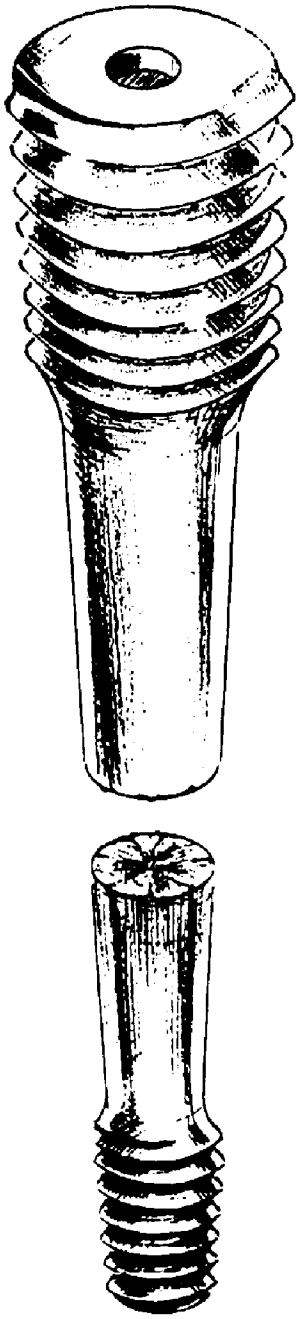


Figure D-10. Failure characteristics of brittle metal due to tension load

D–4. Static tension failure

Static tension failure is illustrated in figure D–11.

D–5. Shear loads

Examples of shear load are shown in figures D–12 and D–13.

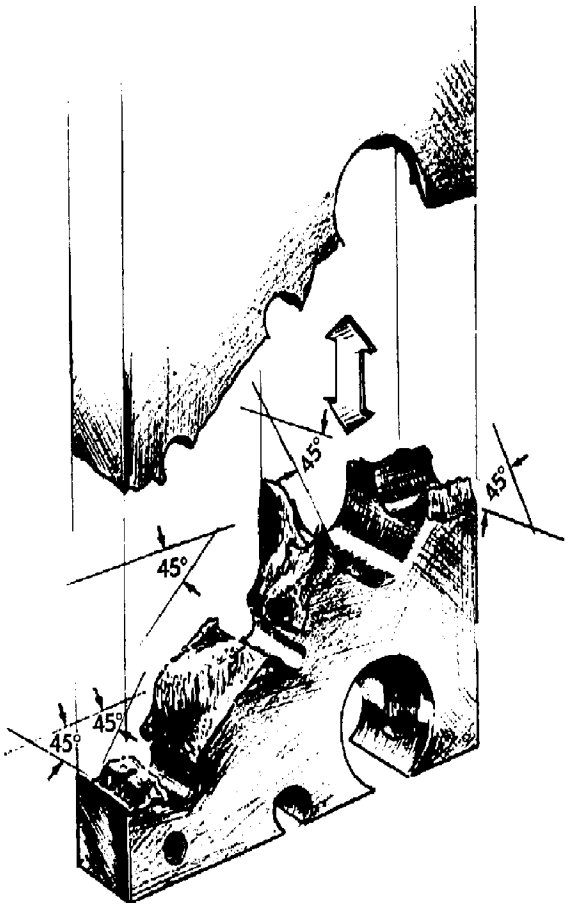


Figure D-11. Static tension failure

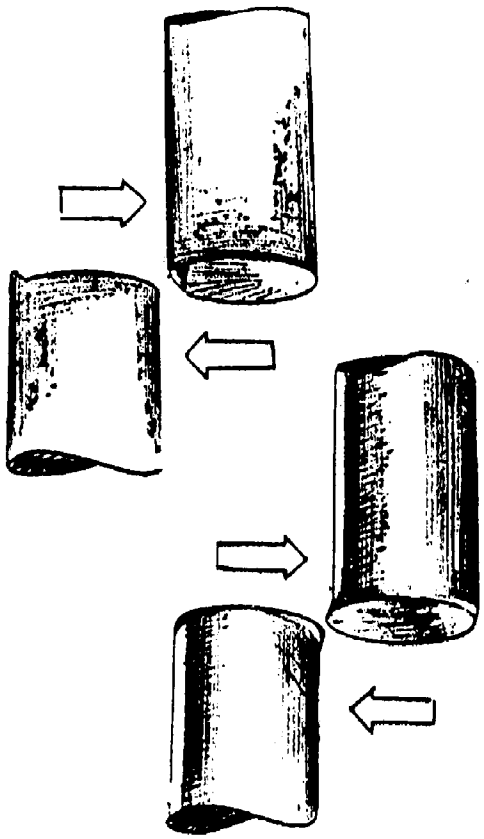


Figure D-12. Pure shear failure

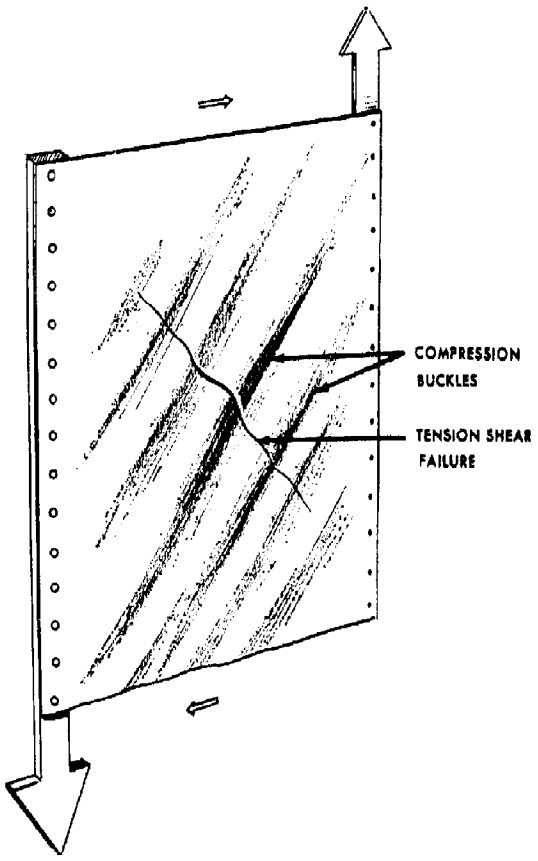


Figure D-13. Compression buckles and tension shear failure due to shear loads

Appendix E
Medical

E–1. Processing a gross autopsy

a. Conduct of gross autopsy. To conduct the gross autopsy, the services of an experienced pathologist are highly desirable. When possible, autopsies should be performed by AFIP. If AFIP personnel cannot perform the autopsy, it will be performed by personnel in the following order of precedence: first, DOD pathologist, secondly, by a civilian forensic pathologist. The Joint Committee on Aviation Pathology recommends the following six steps a pathologist should follow to perform an autopsy.

(1) Become thoroughly familiar with the type of equipment, seating arrangements, escape mechanism, scene of the crash and objects personnel may have struck during the accident.

(2) Become thoroughly familiar with all available information relative to the fatal accident, the nature of the accident, facts about weather, health of the deceased personnel involved, and their condition before and during the accident.

(3) Carefully examine the helmet, clothing, and other protective clothing and equipment. Tissue particles attached to these objects may be identified by cytological examination and should also be examined under ultraviolet light.

(4) Meticulously examine the exterior of the body and viscera with necessary close-up photographs and X–ray pictures of the skeleton, giving special attention to a detailed examination of all abrasions, lacerations, deep wounds, and fractures.

(5) Request a microscopic study and chemical analysis of the tissues for poisons. Suitable samples should be fixed in formaldehyde and dispatched within 96 hours to the Director, Armed Forces Institute of Pathology, ATTN: AFIP–RRR, Washington, DC 20306–6000, for histological examination. Specimens for toxicological examination should be quickly frozen in unfixed condition, placed in plastic sacks or rubber bags, and sent by military aircraft or air express within 60 hours direct to the Director, Armed Forces Institute of Pathology. The AFIP is prepared to examine tissues for carbon monoxide, lactic acid, alcohol, and any other substances specified. Specimens of urine, blood, liver, kidneys, and brain are best suited for identifying poisons.

(6) Write a complete autopsy protocol. The protocol will include the findings transmitted from the AFIP and will be correlated with the findings obtained at autopsy. This may be done in narrative form and by filling out DD Form 1322 (Aircraft Accident Autopsy Report).

b. Preparation of gross autopsy report. Within 60 hours following completion of the gross autopsy, five copies of the completed gross autopsy report will be prepared to include—

(1) *DD Form 1322.* A detailed description of gross pathologic changes will be attached.

(2) *Supplementary data.* Supplementary data will include, if applicable; photographs of the body, individual organs, and other pertinent material, and copies of X–rays made at autopsy.

(3) *Results.* The results of microbiological studies or the status of these studies and results of blood and urinalysis; i.e., drug screen, lactic acid, carbon monoxide, and alcohol.

(4) *Summary.* Summary of the case and pathological diagnoses.

c. Distribution of gross autopsy report.

(1) One copy of the autopsy report and photographs of each individual fatally injured in an aircraft accident will be submitted to Commander, USASC, ATTN: CSSC–ZM, Fort Rucker, AL 36362–5363. The autopsy report and photographs of deceased personnel will not accompany the technical report of the accident through channels.

(2) One copy of DA Form 2397–9–R (aviation only), and one copy of the autopsy report for each individual fatally injured, along with accompanying photographs, will be sent directly to the Director, Armed Forces Institute of Pathology, ATTN: Aerospace Pathology Division, Washington, DC 20306.

(3) One copy of the report will be retained by the laboratory of the medical facility making the investigation.

E–2. Collection and shipment of specimens

a. The following tissue and fluid samples are recommended for fatalities and forensic studies:

Note. (1. Vitreous humor may be substituted if no blood or urine is available.)

BLOOD: 25–50 ml.
URINE: 100–500 ml.
STOMACH CONTENTS: 100–500 ml.
BILE: All available.
LIVER: 500 Gm.
BRAIN: 100–200 Gm.
KIDNEY: 200–300 Gm.
LUNG: 200–300 Gm.
SKELETAL MUSCLE: 200–300 Gm.
FAT: 200 Gm.

b. Packaging & 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 will become brittle, crack, and come apart when placed in dry ice for 24 hours or longer. If fluids, they should be placed in tightly closed, preferably screw cap polyethylene containers. All of these primary containers are to be labeled with the name and service number of the individual, the type of specimen, date, name of the submitting facility, and the flight surgeon's or pathologist's name.

c. Shipment. All primary containers should be wrapped with sufficient absorbent material to contain any leakage and then placed in a secondary container (a polyethylene plastic bag) and again heat

sealed. A third, large polyethylene bag may now be used to keep all the specimens from one individual together. The frozen tissue and body fluids must now be packed in an insulated shipping container large enough to hold the specimens plus a quantity of dry ice approximately 3 times the weight of the specimens. The frozen specimens and dry ice should not be packed in containers which seal to the extent that gas is not permitted to escape; gas pressure within a sealed container presents a potential hazard and could cause the container to burst. Dry ice must not be placed in a thermos bottle. The shipment MUST be made via Air Express (overnight) or Air Freight. This is the only method rapid enough to deliver the specimens to AFIP as quickly as is necessary to preserve them in their frozen state. Never send specimens by military air (medevac or otherwise). One cannot overemphasize the need to pack the specimens with the utmost care in sturdy containers, properly labeled, to include the proper paperwork.

d. Addressing the shipment. The following information should be placed on the outside wrapper of all shipments:

(1) Flight Surgeon or Pathologist's Address.

(2) The Director, Armed Forces Institute of Pathology ATTN: AFIP–RRR, Washington, DC 20306–6000.

(3) "RUSH — FRAGILE."

(4) Aircraft Accident/Forensic Case (as appropriate).

(5) Specimen for Toxicological Examination.

(6) Dry ice will last until (date).

(7) If Chain of Custody is required: Annotate outside wrapper"Evidence Enclosed."

e. AFIP notification.

(1) Notifying AFIP that specimens are about to be shipped contributes immeasurably to expeditious handling of the shipment on arrival and may even make the difference as to whether the specimens reach AFIP in good condition or not.

(2) Telephone numbers are as follows: Commercial Tox Div (202) 576–2982; Main Desk (202) 576–2800; DSN Tox Div 291–2910/2982; DSN Main Desk 291–2800.

(3) The message and/or telephone call should include the following information:

Aircraft Accident/Forensic Case (as appropriate) Material.
Patient(s)'s name, rank, service number.
Method of Shipment (Air Express/Air Freight).
Name of Washington, DC, area airport to receive shipment.
Name of Airline.
Flight Number.
GBL/Airbill Number.
Flight Surgeon or Pathologist's Name & Address.
Departure Time and Date.
Arrival Time and Date.
Brief Description of Contents.
Chain of Custody, if required.
Other Information.

E–3. Incidents with survivors

a. Collection. Only the following specimens need be collected:

(1) SERUM: 15–20 ml (no preservatives) (unhemolyzed).

(2) BLOOD: 15–20 ml (Sodium Fluoride or EDTA).

(3) URINE: 50 ml is optimum (no preservatives).

b. AFIP. AFIP recommends that regardless of the type of container that these specimens are collected in that they be placed in a primary container of polyethylene (one with a top that is a screw cap or that seals tightly for shipment.) This primary container must be labeled with the name and service number of the individual.

c. Packing and shipment. For packing and shipment, the primary containers should be wrapped with sufficient absorbent material to contain any leakage, placed in a secondary container (polyethylene plastic bag) and then heat sealed. A third, large, polyethylene bag may now be used to keep all the specimens from one individual together. The blood and urine may now be packed, unfrozen, in a shipping container of sturdy cardboard, plastic or metal construction and mailed FIRST CLASS to AFIP. Registered mail and/or "Return Receipt Requested"is not necessary nor recommended and if the address is not present, could delay accessing and analysis.

d. Outside markings. The following information should be placed on the outside wrapper of all shipments: The Director, Armed Forces Institute of Pathology ATTN: AFIP–RRR, Washington, DC 20306–6000.

Note. If Chain of Custody is required: Annotate the above label"Evidence Enclosed" .

E–4. Forms, documents, and paperwork

The following forms are necessary (original and 1 copy):

a. Aircraft accident fatalities.

(1) DD Form 1322—Aircraft Accident Autopsy Report.

(2) DD Form 1323—Toxicological Examination—Request and Report.

(3) SF Form 543—Contributor's List of Pathologic Material.

b. Medical/legal (forensics).

(1) DD Form 1323—Toxicological Examination—Request and Report.

(2) SF Form 503—Clinical Record—Autopsy Protocol Incidents With Survivors.

(3) SF Form 543.

(4) DD Form 1323.

c. Form legibility. In order that these forms remain legible during packing, shipping, unpacking, etc., we request that they be placed into their own polyethylene bag. All available information on the patient's or crew member's health history; the conditions prior to the crash or incident; a site description and the condition of the body(s) when recovered, should be sent to AFIP. This historical data and array of pertinent facts can assist the toxicologist in selecting special procedures to supplement routine analysis. To the greatest extent possible, forms and paperwork should be typewritten or at least carefully printed.

Appendix F
Accident/Incident Event Codes Associated With Aircraft Accidents

F–1.

The following codes and explanations below are provided to categorize aviation accidents by the type of event(s) involved (see table F–1).

F–2.

Select the event(s) (table F–2) that best categorize the accident and enter the code(s) in block 2 of DA Form 2397–1–R.

Table F–1
Accident/Incident Event Codes

Code: 01 **Explanation:** Precautionary landing (PL). A landing resulting from unplanned events, occurring while the aircraft is in flight that make further flight inadvisable. This event is to be used for PLs where no other event applies or in conjunction with other materiel failure events.
Code: 02 **Explanation:** Forced landing (FL). A landing caused by failure or malfunction of engines, systems, or components that makes continued flight impossible. This event is to be used in conjunction with other materiel failure/malfunction events.
Code: 03 **Explanation:** Aborted takeoff. An unplanned event that occurs before liftoff that interrupts a planned flight. This event is to be used for aborted takeoffs where no other event applies or in conjunction with other materiel failure events.
Code: 04 **Explanation:** Human factor event. A psychological, physiological, or

Table F–1
Accident/Incident Event Codes—Continued

pathological condition that occurs to personnel when intent for flight exists and results in interference with a crewmember's duties during aircraft operations or mission being delayed, diverted, or aborted.

Code: 05
Explanation: Cargo event. Injury or property damage resulting from cargo– related accident/incident; intentional or unintentional jettisoning of cargo hook load.

Code: 06
Explanation: Personnel handling event. Injury or property damage involving personnel handling errors or personnel handling.

Code: 07
Explanation: External stores event. Injury or property damage resulting from external stores handling errors or equipment failures.

Code: 08
Explanation: Multiple aircraft event. Injury or property damage resulting from the interactions of two or more aircraft. To qualify as a multiple aircraft event, two or more aircraft, with engines running, must be involved.

Code: 09
Explanation: Misappropriated aircraft. An aircraft accident that occurs during the operation of an Army aircraft that has been misappropriated, regardless of aircrew designation. Intent for flight must exist.

Code: 10
Explanation: Drone aircraft. Drone aircraft are identified by "Q" designator, and may be flown or operated by rated or nonrated personnel, or by remote control. When manned, they will be regarded as aircraft and reported accordingly. When unmanned, and operated by remote control, the accident will be reported using DA Form 285.

Code: 11
Explanation: Contractor aircraft accident. An aircraft accident that occurs as a result of a government contractor's operation in which there is damage to Army property or injury to Army personnel. Included is non–delivered equipment for which the Army has assumed responsibility.

Code: 12
Explanation: Aircraft ground accident. Injury or property damage involving an Army aircraft in which no intent for flight exists and the engines are in operation.

Code: 13
Explanation: Lazer–induced/related. Property damage or personnel injury resulting from lazer operations created. May be used in conjunction with other events.

Code: 14
Explanation: Fratricide. Persons killed or wounded, or equipment damaged, in military action, mistakenly or accidentally, by friendly forces actively engaged with the enemy, who are directing fire at hostile force or what is thought to be a hostile force.

Code: 15–19
(Reserved for future additions.)

Code: 20
Explanation: Refueling Accident. Damage incurred during refueling operations on the ground or inflight.

Code: 21
Explanation: Midair Collision. Those accidents in which more than one aircraft collide in flight. Hover is considered in flight. Damage does not have to be done to both aircraft (will be used in addition to "08 multiple aircraft event").

Code: 22
Explanation: Helocasting. Property damage or personnel injury occurring during helocasting operations.

Code: 23
Explanation: Hard Landing. Damage incurred due to excessive sink rate on landing touchdown. Includes autorotation landings when skids are damaged; main rotor blade flexing into tail boom; tire blowing on

Table F–1
Accident/Incident Event Codes—Continued

touchdown; landing gear driven into fuselage; fuselage, wing, etc., buckling. Note: The landing area must be suitable for a probable successful landing.

Code: 24
Explanation: Wheels–Up Landing. Aircraft equipped with retractable landing gear in the wells. Includes intentional gear–up landings; crew forgetting to lower gear; gear does not extend when gear handle placed down.

Code: 25
Explanation: Landing Gear Collapse/Retraction. During takeoff, landing, or taxi, the gear collapses for any reason or the crew inadvertently retracts or retracts to soon on takeoff (does not include gear shearing due too hard landing).

Code: 26
Explanation: Undershoot. When an approach is being made to a prepared area of field and the aircraft touches down short of the suitable landing surface. (Does not include striking wires, trees, etc., on approach except an aircraft striking an airport boundary fence.)

Code: 27
Explanation: Overshoot or Overrun. Landing in which the aircraft runs off the end of the runway because of touchdown speed, too–short runway, touching down too long, or failure of brakes.

Code: 28
Explanation: Ditching. Landing in a controlled attitude in water. (Does not include creeks, streams, etc., or those landings to ships or barges in which the aircraft crashes in the water.)

Code: 29
Explanation: Ground Loop/Swerve. When aircraft damage is incurred because absolute directional control is not maintained (intentional or unintentional). Includes F/W ground loops; R/W autorotational landings; R/W running landings due to antitorque failures; aircraft running off side of runway.

Code: 30
Explanation: Collision With Ground/Water. Those accidents in which the aircraft strikes the ground or water unintentionally. Includes crashing into a mountain under IFR, IMC, or night; inadvertent flying into the ground or water, such as making a gun run and failing to pull up; low–level flight resulting in striking ground or water.

Code: 31
Explanation: Aircraft Collisions on the Ground. Accidents in which two or more aircraft collide on the ground. None of the aircraft can be in flight. (used in addition to '08' multiple aircraft event).

Code: 32
Explanation: Other Collisions. Accidents when an aircraft collides with something not accounted for by other type events listed.

Code: 33
Explanation: Rotor overspeed. Main rotor RPM exceeding the allowable limits for continued flight.

Code: 34
Explanation: Fire and/or Explosion on the Ground. Accidents that are initiated by a fire or explosion. The damage incurred must be prior to lift–off and/or after touchdown.

Code: 35
Explanation: Fire and/or Explosion in the Air. Same as on the ground except damage must be after lift–off and before touchdown.

Code: 36
Explanation: Equipment Loss or Dropped Object. Accidents in which some part of the aircraft or attached equipment is lost in flight, other than cargo and external stores.

Code: 37
Explanation: Inflight Breakup. Accidents in which aircraft begins to break up in flight. In these accidents, any type of landing is not expected. Includes loss of main rotor blades; loss of wing.

Code: 38

Table F–1
Accident/Incident Event Codes—Continued

Explanation: Spin or Stall. Fixed wing aircraft type accidents resulting in stalling and/or spinning due of loss of airspeed, or excessive angle of attack.

Code: 39
Explanation: Abandoned Aircraft. Accidents in which all flight crew eject or parachute.

Code: 40
Explanation: Flight–Related Accident. Damage to property or injury to personnel without damage to aircraft.

Code: 41
Explanation: Instrument Meteorological Condition (IMC). Aircraft must be in IMC conditions when the accident/emergency occurs. This is a condition event and should not be used in the first position.

Code: 42
Explanation: Rappelling. Property damage or personnel injury occurring during rappelling operations.

Code: 43
Explanation: STABO. Property damage or personnel injury occurring during STABO operations.

Code: 44
Explanation: Overstress. Stress damage to aircraft as a result of operating aircraft outside the design limitations.

Code: 45
Explanation: FOD Incident. Internal or external FOD damage confined to aircraft turbine engines only.

Code: 46
Explanation: Rotor/Prop Wash. Property damage or personnel injury resulting from rotor/prop wash (does not include damage incurred by event 75).

Code: 47
Explanation: Engine Overspeed/Overtemp. Engine RPM or temperature exceeding the allowable limits for continued operations.

Code: 48
Explanation: Brownout. Loss of visual reference to the ground or horizon caused by rotor wash swirling dust around the aircraft. This is a condition event and should not be used in the first position.

Code: 49
Explanation: Bird Strike. Accidents in which any part of the aircraft collides with a bird while in flight.

Code: 50
Explanation: Tree Strike. Accidents as a result of aircraft striking vegetation during any phase of flight.

Code: 51
Explanation: Wire Strike. Accidents as a result of the aircraft striking any kind of wires during any phase of flight.

Code: 52
Explanation: Inflight Breakup due to mast bumping. Accidents in which the main rotor separates as result of mast bumping.

Code: 53
Explanation: Missing Aircraft. Used when an aircraft does not return from a flight and is presumed to have crashed.

Code: 54
Explanation: FOD. Accident in which foreign object damage is the only damage incurred.

Code: 55
Explanation: Dynamic Rollover. Accident in which the main rotor blades strike the terrain as a result of exceeding the lateral CG limits, while the aircraft structure is still intact.

Code: 56
Explanation: MOC. Accidents that occur during an MOC while the engine(s) is(are) in operation and/or rotors turning.

Table F–1
Accident/Incident Event Codes—Continued

Code: 57
Explanation: Weapons Related. Accidents that result in property damage or injury to personnel.

Code: 58
Explanation: Lightning Strike. Damage to aircraft/injury to occupant because of lightning strike(s).

Code: 59
Explanation: Rescue operations. Property damage or personnel injury occurring during rescue operations.

Code: 60
Explanation: Object Strike. Aircraft/aircraft component struck objects other than ground, trees, or objects included in other events.

Code: 61
Explanation: Air to Ground Collision. Aircraft in the air collides with or strikes aircraft on the ground.

Code: 62
Explanation: Stump Strike. Aircraft contacts stump during routine landing.

Code: 63
Explanation: Antenna Strike. Aircraft damage caused by contact with an antenna.

Code: 64
Explanation: Engine Overtorque/Overload. Engines that have been subjected to torque loads beyond power limits specified, or engine loses rpm because of overload of aircraft for density altitude.

Code: 65
Explanation: Whiteout. Loss of visual reference to the ground or horizon caused by rotor wash swirling snow around the aircraft. This is a condition event and should not be used in the first position.

Code: 66
Explanation: Tiedown Strike. Damage to the aircraft caused by main rotor tiedown device attached to M/R rotor during engine start.

Code: 67
Explanation: Parachute. Accidents involving paradrop operations inside or still attached to the aircraft.

Code: 68
Explanation: Mast Bumping. Damage resulting from contact between the main rotor and mast but not resulting in rotor separation.

Code: 69
Explanation: Structural Icing. The formation of ice on aircraft structures to include the rotor systems. Does not include carburetor, induction, or pitot static system icing.

Code: 70
Explanation: Engine Failure. Engine fails to develop sufficient power to maintain flight or internal failure of power plant. Excludes fuel starvation or fuel exhaustion and FOD.

Code: 71
Explanation: Transmission Failure. Internal failure of a main transmission.

Code: 72
Explanation: Vertical Fin Strike. Damage caused by the tail rotor blades coming in contract with the vertical fin on single rotor helicopters.

Code: 73
Explanation: Spike Knock. Damage occurred when the transmission spike contacts the striker plate with sufficient force to cause damage.

Code: 74
Explanation: Seatbelt/Restraint Harness Strike. Damage caused by unsecured seatbelts/restraint harnesses.

Code: 75
Explanation: Blade Flapping. Damage resulting from wind or rotor wash

Table F–1
Accident/Incident Event Codes—Continued

from other aircraft that causes the M/R blades to flap to the extent that damage occurs.

Code: 76
Explanation: Fuel Exhaustion. Power loss resulting from using all usable fuel aboard an aircraft.

Code: 77
Explanation: Fuel Starvation. The result of fuel ceasing to flow to the power plant while fuel is still on board the aircraft. Example: The pilot fails to switch tanks when one runs dry or blockage of fuel lines occurs because of contamination.

Code: 78
Explanation: Animal Strike. During takeoff, landing, etc., an animal is struck by any part of the aircraft.

Code: 79
Explanation: Battery Fire/Overheat. A fire in the battery compartment or overheated battery, usually resulting in electrical failure.

Code: 80
Explanation: Excessive Yaw/Spin. May occur on the ground or in the air (helicopter only). A maneuver where the aircraft yaws excessively or spins when power is added without adequate antitorque input, or a loss of antitorque control occurs.

Code: 81
Explanation: Tail Boom Strike. Main rotor contacts tail boom on the ground due to wind conditions. Excludes hard landings and damage caused by rotor wash.

F–3.

In addition to events 70 and 71 listed above the following events are used to categorize materiel factor related mishap events. The event applies regardless of the cause of the failure/malfunction (FWT, maintenance, design or manufacture).

Table F–2
Materiel Factor Events

Code: 82
Explanation: Airframe. Failure/malfunction of any airframe structure to include doors, windows, fairings, canopies, etc to include hardware.

Code: 83
Explanation: Landing Gear. Failure/malfunction of any landing gear part exclusive of the hydraulics.

Code: 84
Explanation: Power train. Failure/malfunction of any part/component of the power train except when events 47 or 70 applies.

Code: 85
Explanation: Drive Train. Failure/malfunction of any part/component of the drive train except when events 86 and 71 applies.

Code: 86
Explanation: Rotor/Propellers. Failure/malfunction of rotor/prop assembles, hubs, blades, etc. Excludes other drive train part failures; e.g. gearboxes, mast etc.

Code: 87
Explanation: Hydraulics System. Failure/malfunction of any hydraulic part. The failure of other systems resulting from hydraulic initiated failures will be coded as hydraulic.

Code: 88
Explanation: Pneumatic System. Failure/malfunction of any pneumatic part. The failure of any other system resulting from pneumatic initiated failures will be coded as pneumatic.

Code: 89

Table F–2
Materiel Factor Events—Continued

Explanation: Instruments. Failure/malfunction of any part of the instrument system that results in a faulty instrument indication.

Code: 90
Explanation: Warning System. Failure/malfunction of any part of the warning system that results in an false indication of a failure/malfunction. Includes electrical components of the warning system.

Code: 91
Explanation: Electrical System. Failure/Malfunction of any part of the AC or DC electrical systems. Includes current producing, transforming, converting and amplifying parts e.g. battery, generator, alternator, relay etc.

Code: 92
Explanation: Fuel System. Failure of any part of the fuel system. Does not include the fuel metering/fuel control unit which will be reported as part of the engine.

Code: 93
Explanation: Flight Control. Failure/malfunction of any part of the system. Excludes hydraulic part failures.

Code: 94
Explanation: Utility/Environmental Control System. Failure/malfunction of any part of the system.

Code: 95
Explanation: Avionics. Failure of any part of the radio navigation/ communication equipment.

Code: 96
Explanation: Cargo Handling Equipment. Failure of the cargo handling equipment attached to the aircraft only.

Code: 97
Explanation: Armament. Failure of any part to include the aiming/firing system.

Appendix G
Accident Investigation Guidelines

G–1.
The following guidelines should be used when conducting an accident investigation.

G–2.
The investigator(s) should ensure the following items are available/included when documenting an aviation accident investigation.

a. Aviation—General.

(1) Orders appointing investigation board.
(2) Blood/urine samples/tissue samples.
(3) Witness information: Name, rank, telephone number; summaries.
(4) Secure work area with access to commercial/DSN telephone.
(5) PRAM/CID/MP reports.
(6) Individual flight records.
(7) Individual medical records/autopsy results.
(8) Individual personnel record(s) (field 201).
(9) ECOD.
(10) Typist, typewriter.
(11) Transportation: air and/or ground.
(12) Name and location of flight surgeon, bodies, injured, AFIP personnel.
(13) Weather statement (signed by forecaster).
(14) Unit and parent organization SOPS to include:
(a) Training.
(b) Administrative.
(c) Maintenance.
(d) Shop standards.
(e) Crew rest.
(f) Safety.
(g) Crew selection.
(15) Directive/policy letters/supplements to regulations that pertain to:
(a) That particular operation.
(b) Assignment of tasks/missions.
(c) ARs 95–1, 95–2, 95–3.
(d) Field manuals/training circulars.
(16) Safety meeting minutes/council meeting minutes (if applicable).
(17) Individual training folders (ATM).
(18) 1:50,000 map which includes location of accident site.
(19) Survey of mishap site/wreckage.
(20) UICs/office symbols and chain of command addresses from unit through MACOM.
(21) Name, grade, title of safety officer, and address to send report.
(22) Collateral officer's name, address, and telephone number.
(23) Post wiring diagram (organization chart).
(24) ATC tapes (from initial contact through –1 hours).
(25) Unit preaccident plan.
(26) PAO/PIO name and telephone number.
(27) Inbrief/outbrief information.
(28) Aircraft recovery team.
(29) Aircraft release letter.
(30) Inventory of aircraft.

b. Aviation Maintenance—Operations

(1) Aircraft logbook.
(a) DA Form 2408–5.
(b) DA Form 2408–12.
(c) DA Forms 2408–13.
(d) DA Form 2408–14.
(e) DD Form 365–4.
(2) Historical records.
(a) Six–month file (DA Form 2408–13 series).
(b) DA Forms 2408–15, 16, 17, 18.
(c) Oil analysis records.
(d) DA Forms 2407–Maintenance Workorders.
(3) Equipment Improvement Report.
(a) Oil analysis records and samples sent.
(b) Fuel analysis.
(4) –10 Operators Manual
(5) list.
(6) ATM.
(7) –10 Organizational Maintenance Manual.
(8) Parts "P" Manual.
(9) Monthly Maintenance Report.
(10) Operations Information.
(a) PPC.
(b) Briefing forms/data.
(c) Flight plan.

G–3.
The investigator(s) should ensure the following items are available/included when documenting a ground accident investigation.

a. Ground—General.

(1) Orders appointing investigation board.
(2) Blood/urine samples (Ask that the command test those involved in the accident.)
(3) Witness information: name, rank, telephone number, summaries.
(4) Secure work area with access to commercial/DSN telephones.
(5) SIR, MP, CID reports.
(6) Individual personnel record(s) (field 201).
(7) ECOD/ACOD.
(8) Individual medical records.
(9) Typist, typewriter/computer.
(10) Photo lab support.
(11) Location and name of doctor conducting autopsy. (Request a doctor on the board be a part of the autopsy).
(12) Weather statement (signed by forecaster).
(13) Aircraft arrangements for overhead photos.
(14) Unit and parent organization SOPs to include:
(a) Training.
(b) Administrative.
(c) Maintenance.
(d) Shop Standards.
(15) Directives that pertain to—
(a) That particular operation.
(b) Assigned tasks.
(16) Training folders (individual, unit).
(17) Individual counseling records.
(18) Individual SF 46/OF 346.
(19) Individual 348.
(20) 1:50,000 map which includes accident site.
(21) UICs/office symbols and chain of command to MACOM.
(22) Local report number.
(23) Name, grade, title of safety manager, and address to send report.

b. Ground—Maintenance Records.

(1) DA Form 2404, Daily inspection and maintenance Worksheet.
(2) DA Form 2404 Retained on file (quarterly/semi–annually).
(3) DA Form 2404, Deferred Maintenance Worksheet.
(4) DA Form 2407, Maintenance Work Orders.
(5) DA Form 2408–20, Oil Analysis Record.
(6) DA Form 314, Preventive Maintenance Record.
(7) DA Form 2406, Materiel Condition Status Report.
(8) Calibration Records.
(9) Dispatch log.
(10) Equipment logbook.
(11) –10 Operator's Manual.
(12) –20 Organizational Maintenance Manual.
(13) "P" Parts Manual.

Glossary

Section I
Abbreviations

AAAR
Abbreviated Aviation Accident Report

ACV
Army combat vehicle

ADSW
Active Duty for Special Work

ADT
active duty for training

AFIP
Armed Forces Institute of Pathology

AGAR
Abbreviated Ground Accident Report

AGR
Active Guard/Reserve

AMC
U.S. Army Materiel Command

AMDF
Army Master Data File

AMV
Army motor vehicle

AOC
Army Operations Center

ARNG
Army National Guard

ARPS
ASMIS Retrieval Processing System

ARSTAF
Army Staff

ASA(IL&E)
Assistant Secretary of the Army (Installations, Logistics, and Environment)

ASA(RDA)
Assistant Secretary of the Army (Research, Development, and Acquisition)

ASMIS
Army Safety Management Information System

BMDF
Base Management Data File

CAI
centralized accident investigation

CFR
Code of Federal Regulations

CG
commanding general

CHI
coastal, harbors, and inland waterways

CID
Criminal Investigation Division

CSA
Chief of Staff, Army

DA
Department of the Army

DAITM
DA Investigation Team for Malfunctions

DAS
Director of the Army Staff

DASAF
Director of Army Safety

DDN
Defense Data Network

DEH
Director of Engineering and Housing

DESOH
Deputy for Environment, Safety, and Occupational Health

DHFN
Direct Hire Foreign National

DIO
Director of Industrial Operations

DOD
Department of Defense

DOL
Department of Labor

DOT
Department of Transportation

DR
deficiency report

DSN
Defense Service Network

E3
electromagnetic environmental effects

ECOD
estimated cost of damage

EIR
equipment improvement report

EMI
electromagnetic interference

EMR
electromagnetic radiation

EOD
explosive ordnance disposal

EPA
Environmental Protection Agency

FAA
Federal Aviation Administration

FECA
Federal Employees' Compensation Act

FOD
foreign object damage

FOIA
Freedom of Information Act

FTX
field training exercise

FWT
fair wear and tear

GCMCA
general court–martial convening authority

GFE
Government furnished equipment

GFM
Government furnished material

GFP
Government furnished property

GS
general schedule

GSA
General Services Administration

HQDA
Headquarters, Department of the Army

IAI
installation–level accident investigation

IBD
inhabited building distances

ILD
intraline distance

IMD
intermagazine distance

JAG
Judge Advocate General

KATUSA
Korean Augmentation to the U.S. Army

LOTS
logistics–over–the–shore

MACOM
major Army command

MOS
military occupational specialty

MP
military police

MTF
medical treatment facility

NAF
nonappropriated fund

NAIRA
Nuclear Accident and Incident Response and Assistance

NATO
North Atlantic Treaty Organization

NOK
next of kin

NRC
Nuclear Regulatory Commission

NSN
national stock number

NTSB
National Transportation Safety Board

OCSA
Office of the Chief of Staff, Army

ODCSLOG
Office of the Deputy Chief of Staff for Logistics

ODCSOPS
Office of the Deputy Chief of Staff for Operations and Plans

OSD
Office of the Secretary of Defense

OSHA
Occupational Safety and Health Act/Administration

PCE
protective clothing and equipment

PCS
permanent change of station

PEO
Program Executive Officer

PM
Program Manager or Product Manager

PMO
Provost Marshal Office

POC
point of contact

POV
privately owned vehicle

QASAS
Quality Assurance Specialist, Ammunition Surveillance

QD
quantity distance

RDTE
research, development, test, and evaluation

RF
radio frequency

ROTC
Reserve Officers' Training Corps

RTS
Recommendation Tracking System

SIDPERS
Standard Installation/Division Personnel System

SIR
serious incident report

SJA
Staff Judge Advocate

SOP
standing operating procedures

SSN
social security number

SSRA
system safety risk assessment

TBO
time before overhaul

TDY
temporary duty

TM
Technical Manual

TSG
The Surgeon General

TTAD
Temporary Tour Active Duty

USAR
U.S. Army Reserve

USASC
U.S. Army Safety Center

USATCES
U.S. Army Technical Center for Explosives Safety

VISTA
Volunteers in Service to America

Section II
Terms

Aborted takeoff
An unplanned event that occurs before intent for flight exists, with engine(s) running, that interrupts a planned flight (except for maintenance test flights and factory acceptance flights).

Accident
An unplanned event that causes personal injury or illness, or property damage.

Active Army personnel
Members of the Army on full–time duty in active military service, including cadets at the U.S. Military Academy.

Aircraft
A manned weight carrying structure for navigation of the air that is supported by its own buoyancy of the dynamic action of the air against its surfaces.

Aircraft ground accident
Injury or property damage accidents involving Army aircraft in which no intent for flight exists, and the engine(s) is/are in operation.

Army accident
An accident that results in injury/illness to either Army or non–Army personnel, and/or damage to Army or non–Army property as a result of Army operations (caused by the Army).

Army civilian personnel
a. Senior Executive Service, General Management, General Schedule, and Federal Wage System employees.
b. Corps of Engineer Civil Works employees.
c. Army National Guard and Army Reserve technicians.
d. Nonappropriated fund employees (excluding part–time military).
e. Youth/Student Assistance and Temporary Program employees; Peace Corps and Volunteers in Service to America (VISTA) volunteers; Job Corps, Neighborhood Youth Corps, and Youth Conservation Corps Volunteers; Family Support Program volunteers.

Army combat vehicle
Tanks, self–propelled weapons, tracked armored personnel carriers, amphibious vehicles ashore, and similar equipment (tracked vehicle).

Army motor vehicle
Any vehicle that meets the following criteria:
a. A vehicle that is owned, leased, or rented by the Department of the Army and/or Reserve components.
b. A vehicle that is primarily designed for over–the–road operation.
c. A vehicle whose general purpose is the transportation of cargo or personnel. Examples are passenger cars, station wagons, trucks, ambulances, buses, motorcycles, firetrucks, and refueling vehicles.

Army National Guard personnel
ARNG personnel who are on—

a. Active duty for training.
b. Inactive duty training.
c. Annual training.
d. Active duty special work (ADSW).
e. AGR.
f. TTAD.
g. Full–time manning.

Army personnel
Active Duty Army personnel, Army civilian personnel, Army Reserve personnel, and Army National Guard personnel.

Army property
Any item of Army property, or property leased by the Army for which the Army has assumed risk of loss, such as aircraft, vehicle, building, structure, system, etc..

Army Reserve personnel
USAR members who are on—

a. Inactive duty training.
b. Annual training.
c. Active duty for training.
d. Full–time manning.
e. Temporary Tour Active Duty (TTAD).
f. Active Duty for Special Work (ADSW).
g. Active Guard/Reserve (AGR).

As a result of Army operations
Army involvement in an accident event with Army responsible for the cause of the accident.

Commander
An individual that exercises authority and responsibility over subordinates by virtue of rank or position. The purpose of that authority and responsibility is to effectively use available resources and plan the employment of, organize, direct, coordinate and control the actions of an Army organization for the purpose of successful mission accomplishment.
Examples of commanders are as follows:

a. Commander of a major Army command, CONUS and OCONUS.
b. The Chief of Engineers (civil and military works).
c. Commander, U.S. Army Space and Strategic Defense Command.
d. The Chief, Army National Guard Bureau.
e. Commander, U.S. Army Medical Research and Development Command.
f. Commanders of Army installations with a full–time safety professional. This includes posts, camps, stations, and military communities.
g. State adjutants general (ARNG).
h. Commanders of Army Reserve organizations with a full–time safety professional.
i. Commanders of medical treatment facilities.
j. Commanders in direct support of general support maintenance units.
k. Director of Facilities Engineering.
l. Provost Marshal/Law Enforcement Commander.
m. Director of Industrial Operations.
n. U.S. Army Plant Representative Office.
o. Commander of TOE, MTOE, or TDA organization.

Competent medical authority
Any duly qualified physician (Government or private, including surgeons, podiatrists, dentists, clinical psychologists, optometrists, chiropractors, and osteopathic practitioners) who is approved by the Office of Workman's Compensation to render treatment.

Contractor accident
An accident that occurs as a result of a Government contractor's operations in which there is damage to U.S. Government or Army property or equipment, injury or occupational illness to Army personnel, or other reportable event.

Destroyed aircraft
An aircraft is considered destroyed/total loss when the estimated cost to repair exceeds the current full–up replacement cost.

Drone aircraft
Those serial vehicles having a "Q" designator and which can be flown or operated by rated or non–rated personnel, or which can be flown or operated in the remote control configuration.

Emergency
An event for which an individual perceives that a response is essential to prevent or reduce injury or property damage.

Environmental factors
Environmental conditions which had, or could have had an adverse effect on the individual's actions or the performance of equipment.

Fair wear and tear
Damage to time–between–overhaul (TBO) items such as gearboxes, tires, and other items that deteriorate with use. (Hot starts, overspeeds, and overtorques are not considered fair wear and tear.)

First–aid
One–time medical treatment for minor scratches, cuts, burns, and similar injuries that do not ordinarily require medical attention, plus any follow–up visits for observation. Such one–time treatment and follow up visits will be considered first aid, even if provided by a physician.

Flight crew
Personnel on flight pay who are involved in operation of the aircraft.

Forced landing
A landing caused by failure or malfunction of engines, systems, or components that makes continued flight impossible.

Foreign object damage (FOD)
Damage to Army vehicle/equipment/property as a result of objects alien to the vehicle/equipment damaged. Excludes aircraft turbine engine(s) defined as a FOD incident.

Fratricide/Friendly Fire (FF)
A circumstance applicable to persons killed or wounded, or equipment damaged, in military action, mistakenly or accidentally, by friendly forces actively engaged with the enemy, who are directing fire at a hostile force or what is thought to be a hostile force. Fratricide/FF incidents will be primarily investigated and reported under DODI 6055.7.

Ground accident
Any accident exclusive of aviation (flight/flight related) (for example, AMV, ACV, POV, marine, etc..)

Hospitalization
Admission to a hospital as an inpatient for medical treatment.

Human error
Human performance that deviated from that required by the operational standards or situation. Human error in accidents can be attributed to a system inadequacy/root cause in training, standard, leader, individual or support failure indicated below:

Human factors
Human interactions (man, machine and/or environment) in a sequence of events that were influenced by, or the lack of human activity, which resulted or could result in an Army accident.

Individual failure
Soldier knows and is trained to standard but elects not to follow standard (self–discipline – mistake due to own personal factors).

Initial Denial Authority
The official at HQDA–level with the authority to deny release of a document, in whole or in part, under the Freedom of Information Act.

Injury
A traumatic wound or other condition of the body caused by external force, including stress or strain. The injury is identifiable as to time and place of occurrence and member or function of the body affected, and is

caused by a specific event or incident or series of events or incidents within a single day or work shift.

Installation–level safety manager

a. The senior full–time safety professional responsible for providing safety support to Army installations, including camps, stations, military communities, and USAR organizations.

b. State Safety Manager or Specialist (ARNG).

Intent for flight

Intent for flight begins when aircraft power is applied, or brakes released, to move the aircraft under its own power with an authorized crew. Intent for flight ends when the aircraft is at a full stop and power to move the aircraft is completely reduced.

Investigation

A systematic study of an accident, incident, injury, or occupational illness circumstances.

Lost–time case

A nonfatal traumatic injury that causes any loss of time from work beyond the day or shift in which it occurred or a nonfatal non–traumatic illness/disease that causes disability at any time. This definition will be used when computing civilian lost–time frequencies for DOL reporting.

Lost–workday case involving days away from work

Cases in which an accident results in Army personnel missing one or more days of work. Days away from work are those workdays (consecutive or not) on which Army personnel would have worked but could not because of injury, occupational illness, or job–related physical deficiencies detected during medical surveillance examinations. Excluded are days that Army personnel would not have worked even though able to work (for example, weekends or holidays) and the day of the injury or onset of occupational illness.

Materiel factors

When materiel elements become inadequate or counter–productive to the operation of the vehicle/equipment/system.

Medical treatment

Any treatment (other than first aid) administered by a physician or by registered professional medical personnel under the orders of a physician.

Nonappropriated fund (NAF) employees

Employees paid from nonappropriated funds, including summer and winter hires and special NAF program employees. Military personnel working part–time in NAF employment are excluded.

Nonfatal case without lost workdays

Cases other than lost–workday cases where Army military or civilian personnel, because of an injury or occupational illness, experienced one or more of the following:

a. Permanent transfer to another job or termination.

b. Medical treatment greater than first aid.

c. Loss of consciousness.

d. Restricted work activity or profile.

e. Diagnosis as having an occupational illness that did not result in a fatality or lost–workday case. This includes newly diagnosed occupational illnesses detected on routine physical examinations.

Nuclear weapon

A device in which the explosion results from the energy released by reactions involving atomic nuclei, either fission, fusion, or both. For the purpose of this regulation, nuclear components of weapons are also included.

Nuclear weapon accident

An unexpected event (Flagword: OPREP – 3 PINNACLE BROKEN ARROW) involving nuclear weapons or nuclear components that results in any of the following:

a. Non–nuclear detonation or burning of a nuclear weapon or radiological nuclear weapons component.

b. Radioactive contamination.

c. Seizure, theft, loss, or destruction of a nuclear weapon or radiological nuclear weapon component, including jettisoning.

d. Public hazard, actual or implied.

Nuclear weapon minor incident

An unexpected event (Flagword: DULL SWORD) involving nuclear weapons that is not reportable as a nuclear weapon accident or significant incident, but which results in any of the following:

a. Damage to the warhead, or warhead section which Army organizations are authorized to repair, or malfunctions of associated equipment that could result in damage to the warhead, or warhead section. (Associated equipment includes test, handling, launch, control, arming, and monitoring systems.)

b. Damage, loss, or destruction of a nuclear–type training weapon, warhead, or warhead section. Of particular concern are instances of damage or equipment failure when the same technical procedures and equipment prescribed for use with nuclear weapons were being used on a trainer.

c. Unauthorized acts that degrade the safety of a nuclear weapon, unless they are reportable as accidents or significant incidents.

d. A nuclear–capable missile system accident in flight that does not meet the definition of a NUCFLASH or while being transported or stored, even though no nuclear warhead or warhead joint flight test assembly is attached at the time. Missile system accidents will be reported and will contain the flagword DULL SWORD.

e. Any unexpected occurrence which results from Army developmental weapon testing, stockpile testing, or product improvement program testing of a nuclear weapon.

f. Any other condition (for example, potentially adverse publicity, unauthorized release of contamination or suspected contamination of the environment) which is reportable in the judgment of the commander or custodian of a nuclear weapon.

Nuclear weapon significant incident

An unexpected event (Flagword: OPREP–3 BENT SPEAR) involving nuclear weapons or nuclear components that does not fall into the nuclear weapon accident category, but results in any of the following:

a. Evident damage to a nuclear weapon(s) to the extent that major rework, complete replacement or examination, or recertification by the Department of Energy is required.

b. The striking of a nuclear weapon by lightning or when a commander suspects that lightning has degraded the safety or reliability of a nuclear weapon system.

c. Known or suspected arming (partially or fully) of a nuclear weapon.

d. Probable high interest by the public or news media that may result in adverse public reaction (national or international) or premature release of classified information.

e. An attempted penetration, actual penetration, or other unexpected degradation of the security of nuclear weapons sites, activities, or logistical movements.

f. A threat, actual or implied, of an attempt to seize a nuclear weapon. This includes a threat to attack or inflict damage to a nuclear weapons storage site, nuclear weapons, or nuclear weapons security forces.

Nuclear weapon war risk accident

An event (Flagword: OPREP –3 PINNACLE NUCFLASH) that results in an accidental, unauthorized, or unexplained nuclear detonation; or an accidental or unauthorized launching, firing, or use by U.S. forces or U.S.–supported Allied Forces of a nuclear–capable weapon system which could create the risk of an outbreak of war.

Occupational illness

Nontraumatic physiological harm or loss of capacity produced by systemic infection; continued or repeated stress or strain; exposure to toxins, poisons, fumes, etc.; or other continued and repeated exposures to conditions of the work environment over a long period of time. Includes any abnormal physical or psychological condition or disorder, resulting from an injury, caused by long– or short–term exposure to chemical, biological, or physical agents associated with the occupational environment. For practical purposes, an occupational illness is any reported condition which does not meet the definition of an injury.

Occupational injury

A wound or other condition of the body caused by external force, including stress or strain. The injury is identifiable as to time and place of the occurrence and a member or

function of the body affected, and is caused by a specific event or incident or series of events or incidents within a single day or work shift.

Off–duty

Army personnel are off–duty when they:

a. Are not in an on–duty status, whether on or off Army installations.

b. Have departed official duty station, temporary duty station, or ship at termination of normal work schedule.

c. Are on leave and/or liberty.

d. Are traveling before and after official duties, such as driving to and from work.

e. Are participating in voluntary and/or installation team sports.

f. Are on permissive (no cost to Government other than pay) temporary duty.

g. Are on lunch or other rest break engaged in activities unrelated to eating or resting.

On–duty

Army personnel are on–duty when they are—

a. Physically present at any location where they are to perform their officially assigned work. (This includes those activities incident to normal work activities that occur on Army installations, such as lunch, coffee, or rest breaks, and all activities aboard vessels.

b. Being transported by DOD or commercial conveyance for the purpose of performing officially assigned work. (This includes reimbursable travel in POVs for performing TDY, but not routine travel to and from work.)

c. Participants in compulsory physical training activities (including compulsory sports).

Over–the–Road

Operation or driving on paved roads/highways.

Permanent total disability

Any nonfatal injury or occupational illness that, in the opinion of competent medical authority, permanently and totally incapacitates a person to the extent that he or she cannot follow any gainful employment. (The loss or loss of use of both hands, feet, eyes, or any combination thereof as a result of a single accident will be considered as permanent total disability.)

Permanent partial disability

Any injury or occupational illness that does not result in death or permanent total disability but, in the opinion of competent medical authority, results in the loss or permanent impairment of any part of the body, with the following exceptions:

a. Loss of teeth.

b. Loss of fingernails or toenails.

c. Loss of tip of fingers or tip of toe without bone involvement.

d. Inguinal hernia, if it is repaired.

e. Disfigurement.

f. Sprains or strains that do not cause permanent limitation of motion.

Precautionary landing

A landing resulting from unplanned events that makes continued flight inadvisable.

Preexisting physical condition

A medical condition that existed prior to the occurrence of the accident.

Recommendations

Those actions recommended to the command to correct system inadequacies which caused, contributed, or could cause or contribute to an Army accident. Also referred to in this pamphlet as corrective action, remedial measures and/or countermeasures.

Recordable

Reportable accident that meets the minimum criteria stated in the regulation for Class A–D accidents and Class E and FOD incidents.

Reportable

All occurrences that cause injury, illness, or property damage of any kind must be reported to the soldier's/employee's/unit's servicing/ supporting safety office.

Restricted work activity

Individual's injury is such that they are unable to perform their normal duties (for example, light–duty, profile).

ROTC personnel

a. Members of the ROTC during periods of basic or advanced training at premises owned or under the control of the Army whether on or off duty.

b. Cadets performing professional enrichment training while under Army supervision and directed by competent orders, regardless of the location of the training site. Regular training on campus is excluded; that is, weekly drill and classroom instruction.

c. Cadets involved in rifle and pistol marksmanship training under Army supervision on any firing range.

d. Cadets undergoing ROTC flight instruction.

Standards failure

Standards/procedures not clear or practical, or do not exist)

Support Failure

Inadequate equipment/facilities/services in type, design, availability or condition, or insufficient number/type of personnel, which influenced human error, resulting in an army accident.

System inadequacy

A tangible or intangible element that did not operate to standards, resulting in human error or materiel failure. Also referred to in this pamphlet as causes, readiness shortcomings and/or root causes.

Training failure

Soldier/individual not trained to known standard (insufficient, incorrect or no training on task – insufficient in content or amount)

Section III
Special Abbreviations and Terms

This publication uses the following terms not contained in AR 310–50. These include terms used for activities and tasks applicable to Army accident investigating and reporting.

Bystanding/spectating

Includes activities associated with bystanding or spectating regardless of whether on or off duty.

Combat soldiering

Using/developing skills peculiar to combat—includes receiving instruction or training in such skills, excludes classroom training.
Examples: Hand–to–hand combat, slide for life, rope bridge, MOPP, NBC, bayonet training, military operations on urban terrain (MOUT).

Communications

Activities related to installing, operating and recovering communications equipment. Examples: Erect/dismantle, lay/string/recover wire/cable, splice wire cables, install/operate/ disconnect common equipment.

Counseling/advisory

Activities associated with nonsupervisory advice/assistance provided by subject matter specialists on specific topics.
Examples: Alcohol/drug abuse, mental health, community services.

Educational

Includes classroom training, excludes field settings such as FTX, maneuvers.
Examples: Teach/instruct/brief/counsel student/audience activities.

Engineering or construction

Those activities associated with surveying, building, erecting, dissembling or destroying things. Examples: Lay/clear mine fields, bridging, quarrying, welding, brazing, roofing, installing electrical wiring, painting, land surveying, demolition, clearing, digging, concrete work, masonry work, dredging, trenching.

Fabricating

Activities associated with the construction or manufacture of equipment and other products.
Examples: Making/modifying equipment/

products.

Firefighting
Activities associated with developing or using fire–fighting skills. Excludes vehicle operation going to and from the scene.
Examples: Inspecting, rescuing, salvaging, firefighting.

Food/drink preparation
Activities associated with preparing, cooking, and serving food/drinks.
Examples: Preparing food, cleaning food preparation/serving equipment and facilities, cooking food, serving food.

Food and drug inspection
Activities associated with the certification of conditions, products, and facilities. Examples: Inspect livestock/poultry/etc., inspect storage facilities, inspect processing facilities, inspect transport and market facilities.

Handling animals
Activities associated with handling animals.

Handling/material/passengers
Activities associated with the transportation, distribution, and storage of material or passengers. Examples: Distributing/issuing, loading/unloading, transporting/moving/delivering, packing/unpacking/preserving, inventorying/inspecting, weigh/measure, palletize/slingload/rig, retrieve, turn in/store.

Hobbies
Includes activities associated with hobbies, regardless of whether the participation is on or off duty, Army–supervised or unsupervised. Excludes sports. Examples: Camping, gardening, wood/metal working, ceramics.

Horseplay
Spontaneous physical activities not required by duty or mission and not condoned by the Army.

Human movement
Excludes human movement activities listed elsewhere such as sports, maintenance, physical training.
Examples: Walking, running, jumping, bending/leaning, climbing.

Information and arts
Activities associated with the processing and dissemination of information. Includes writing, drawing, drafting, and photographing.
Examples: Taking pictures, printing activities, drafting/illustrating activities.

Janitorial/housekeeping/grounds–keeping
Activities associated with the upkeep, tending or cleaning of premises such as grounds, homes, offices, and other buildings. Excludes maintenance, repair, or services activities. Examples: Floor polishing/buffing/cleaning, vacuuming/sweeping, raking/shoveling/policing, planting, garbage disposal, incinerating.

Laundry/dry–cleaning services
Includes activities performed at personal residences, Laundromats, or on–post laundry/dry–cleaning plants. Examples: Handling laundry, operating laundry/dry–cleaning equipment.

Maintenance/repair/servicing
Activities associated with the maintenance, repair or servicing of equipment and other property. Excludes janitorial, housekeeping or grounds–keeping activities. Examples: Install/remove/modify equipment, tune/adjust/align/ connect, hot–metal work, cold–metal work, plastic working, soldering, repairing tires, inspecting tires/batteries, fueling/defueling, changing/inflating tires, charging batteries.

Office
Activities associated with the performance of clerical, typing, and administrative–type duties. Excludes supervisory activities.
Examples: Typing/work processing, filing/posting, telephoning, operating office machines.

Operating vehicle or vessel
Activities associated with operating vehicles or vessels under power.
Examples: Driving, convoying/road marching, towing/pushing, mowing, hauling/transporting, driver testing, flying, vehicle road testing.

Passenger
Activities associated with being a passenger.

Patient care (people/animals)
Activities associated with the medical treatment, detection, and prevention of disease/injury. Excludes experiments, studies and tests conducted with well people or animals for research purposes. Examples: Injection/inoculation, cleaning wounds, medical equipment operations and handling, laboratory equipment operations and handling, changing dressings, lift/position/escort patients.

Personal hygiene/food/drink consumption/sleeping
Activities associated with taking care of personal requirements.
Examples: Personal cleaning, grooming, eating, drinking, sleeping/resting.

Pest/plant control
Includes activities performed at personal residences and government facilities. Excludes pest control tests and experiments.
Examples: Prepare/mix/dispense chemicals, inspect, setting traps, baits.

Physical training
Body conditioning or confidence building activities, excludes combat skills development.
Examples: Confidence course, combat football, combat basketball, push–ball, marches, calisthenics, pugil stick, running/jogging, PT test.

Security/law enforcement
Activities associated with MP, CID, and other military or civilian personnel performing security or law enforcement rescue duties.
Examples: Traffic safety, investigating, apprehending suspects, guarding/patrolling, controlling disturbances, intelligence activities.

Soldiering
Noncombat activities peculiar to military life—includes receiving instruction/training in such activities, excludes classroom training.
Examples: Marching, police call, formation, barracks detail, field sanitation.

Sports
Includes activities associated with sports, regardless of whether the participation is on duty or off duty, Army–supervised or unsupervised, excludes hobbies. Examples: Racquetball/paddleball, handball, softball, tennis, soccer, baseball, basketball, football, volleyball, skiing, swimming, scuba diving, golf, boating, hunting, fishing, martial arts, canoeing.

Supervisory
Activities associated with the management of personnel. Examples: Inspection tasks, directing workloads/work crews, monitoring work/crews, planning unit activities.

Test/study/experiments
Activities associated with the conduct of tests, studies, and experiments on natural or man–made materiel or on human beings or animals for research projects. Examples: Preparing for test/study/experiment, performing test/study/experiment.

Weapons firing
Carrying, loading, sighting, firing, assembling, etc.
Examples: Emplacing, loading/unloading, sight/aim/target acquisition, elevate/lowering, traversing, fire/discharge/wield/launch/throwing, assemble/disassemble/cleaning bore sighting, misuse.

Index

This index is organized alphabetically by topic and by subtopic within topic. Topics and subtopics are identified by paragraph number.

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT

PART I - STATEMENT OF REVIEWING OFFICIALS

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-309

1. REVIEWING OFFICIALS COMMENTS

2. APPROVING AUTHORITY COMMENTS

a. Signature

3. DEPARTMENT OF ARMY REVIEW

a. Signature

4. CASE NO.	a. Date *(YYMMDD)*	b. Time	c. Acft Serial No.

DA FORM 2397-R, JUL 94

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT

PART II - SUMMARY

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-309

1. a. Classification ☐ A ☐ B ☐ C	b. Category ☐ Flight ☐ Flight Related	2. TYPE EVENTS	a.	b.	c.
3. PERIOD OF DAY ☐ Dawn ☐ Day ☐ Dusk ☐ Night	4. a. On Post ☐ Yes ☐ No	b. On Airfield ☐ Yes ☐ No			
5. NEAREST MIL INSTALLATION		6. NO. OF ACFT INVOLVED			
7. LOCATION	a. City:	b. State:	c. Country:		
8. a. Acft MTDS:	b. (1) Orgn Acft Asgd:	(2) UIC:	c. Instal Acft Asgd:		

9. ORGN/CHAIN OF CMD INVOLVED AND ACCOUNTABLE

a. ORGN/Chain of CMD Involved		Orgn Involved	Chain of Cmd	Chain of Cmd	Chain of Cmd	Chain of Cmd	MACOM
	(1) Unit						
	(2) UIC						
b. ORGN/Chain of CMD Accountable		Orgn Accountable	Chain of Cmd	Chain of Cmd	Chain of Cmd	Chain of Cmd	MACOM
	(1) Unit						
	(2) UIC						

10. a. Estimated Cost ☐ Total Loss			11. SURVIVABILITY	12. IN-FLT ESCAPE	13. FIRE	14. POSTCRASH ESCAPE DIFFICULTIES
(1) Acft Damage Cost	$	Owner	☐ Survivable ☐ Partially Survivable ☐ Nonsurvivable ☐ Acft Missing	☐ Ejection ☐ Bailout ☐ Not Accomplished ☐ NA	☐ None ☐ Inflight ☐ Post-crash ☐ Other	☐ Yes ☐ No ☐ NA
(2) Repair M/Hrs Cost	$	No. M/Hrs				
(3) Other Damage Mil	$	Owner				
(4) Other Damage Civ	$	Owner				
(5) Injury Cost	$					
(6) Total Cost This Acft	$	15. USABLE FUEL ABOARD ACFT:	a. At Takeoff:	b. At Time of Emerg:		
b. Total Cost Multiple Acft	$		c. At Acdt or Term:	d. Type Fuel:		

16. GENERAL DATA	Yes	No
a. Flammable Fluid Spillage		
b. (1) Night Visual Aids Used		
(2) Specify Type		
c. Flt Data Recorder Installed		
d. Field Training Exercise Involved		
e. Heads-Up Display In Use		
f. Emergency Locator Transmitter Installed		

17. Flight Plan: ☐ VFR ☐ IFR ☐ None ☐ NA

18. MISSION
a. Type
b. Operations ☐ Single-ship ☐ Multi-ship

19. INJURIES (Number)	Fatal (A)	Disabling (B - E)	Nondisabling (F-G)	Missing (H)	Not injured (J)
a. Occupants Military					
b. Occupants Other					
c. Non-Occupants Mil					
d. Non-Occupants					
e. Total This Acft					
f. Multiple Acft Event					

20. TERRAIN OF CRASH SITE *(More than one may apply)*

a. General Characteristics ☐ Mountain ☐ Desert ☐ Rolling ☐ Flat ☐ Water
b. Surface at Crash Site ☐ Prepared ☐ Ice ☐ Sod ☐ Snow ☐ Soggy ☐ Water
c. Crash Site Grade ☐ Level ☐ Slope _____ Degrees
d. Obstacles at Crash Site ☐ Stumps ☐ Trees ☐ Bldg ☐ Wires ☐ Rocks/Boulders ☐ Other

21. FLIGHT DATA	Flight Duration	Phase of Operation	Altitude AGL	Altitude MSL	Airspeed KIAS	Heading (Compass)	Aircraft Weight	Overgross Yes	Overgross No
a. Planned Data	Hr Tns								
b. When Emergency Occurred	Hr Tns								
c. Accident or Termination	Hr Tns								

22. ACCIDENT CAUSE FACTORS *(Enter a D, S, or U in appropriate blocks to identify definite, suspected, or undetermined causes)*

a. Personnel		D, S, or U	Personnel (Continued)		D, S, or U
(1) Flight Crew:	Duty		(3) Supervisory	Duty	
	Duty			Duty	
	Duty		(8) Other	Duty	
(2) Ground Crew:	Duty		b. Materiel Failure/Malfunction		
	Duty		c. Environmental		

23. SEQUENCE *(Factual accident sequence from onset of emergency through termination of flight. Use additional sheet if required.)*

24. AVN SAFETY OFFICER	a. Name, Rank, and Orgn	b. Signature

25. CASE NO.	a. Date (YYMMDD)	b. Time	c. Acft Serial No.	26. OTHER ACFT SERIAL NO.

DA FORM 2397-1-R, JUL 94

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT

PART III - FINDINGS AND RECOMMENDATIONS

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYSMBOL
CSOCS-309

1. FINDINGS AND RECOMMENDATIONS *(attach additional sheet, if required)*

2. CODED SUMMARY OF ACCIDENT FINDINGS, SYSTEM INADEQUACIES, AND RECOMMENDATIONS

a. Personnel		(5) Mistake/Error Code	System Inadequacies	Remedial Measures/Recommendations		
(1) Duty	(2) Role ☐ D ☐ S		1	1	2	3
(3) Phase of Operation	(4) ATM Task No.		2	1	2	3
			3	1	2	3
b. Personnel		(5) Mistake/Error Code				
(1) Duty	(2) Role ☐ D ☐ S		1	1	2	3
(3) Phase of Operation	(4) ATM Task No.		2	1	2	3
			3	1	2	3
c. Personnel		(5) Mistake/Error Code				
(1) Duty	(2) Role ☐ D ☐ S		1	1	2	3
(3) Phase of Operation	(4) ATM Task No.		2	1	2	3
			3	1	2	3
d. Materiel		(4) Failure Code				
(1) Role ☐ D ☐ S	(2) Phase of Operation		1	1	2	3
(3) Failed Part Number			2	1	2	3
			3	1	2	3
e. Environmental		(3) Condition Code				
(1) Role ☐ D ☐ S	(2) Phase of Operation		1	1	2	3
			2	1	2	3
			3	1	2	3

3. CASE NO.	a. Date *(YYMMDD)*	b. Time	c. Acft Serial No.

DA FORM 2397-2-R, JUL 94

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT

PART IV - NARRATIVE

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-309

1. NARRATIVE ACCOUNT OF INVESTIGATION *(Use format shown in DA Pamphlet 385-40)*

2. CASE NO.	a. Date *(YYMMDD)*	b. Time	c. Acft Serial No.

DA FORM-2397-3-R, JUL 94

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT

PART V - SUMMARY OF WITNESS INTERVIEW

For use of thiis form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENT CONTROL SYMBOL CSOCS-309

1. NAME OF WITNESS *(Last, First, Mi)*	2. OCCUPATION/TITLE	3. GRADE	4. SSN	5. AGE

6. ADDRESS *(Include ZIP Code) (If military, include organization)*	7. TELEPHONE NUMBER
	8. DATE OF INTERVIEW

9. EXPERIENCE AND BACKGROUND	10. LOCATION AT TIME OF ACDT	11. INTERVIEWER

12. Was a promise of confidentiality offered to the witness? ☐ YES ☐ NO *(If yes, read blk 15a to the witness and complete blk 16. If no, read blk 15b to the witness.)* Confidentiality was requested by the witness. ☐ YES ☐ NO *(If Yes, interviewer sign and date statement below.)*

THE WITNESS MADE THIS STATEMENT UNDER A PROMISE OF CONFIDENTIALITY.

SIGNATURE OF INTERVIEWER _____ DATE _____

13. SUMMARY OF INTERVIEW

14. CASE NO.	a. Date *(YYMMDD)*	b. Time	c. Acft Serial No.

15. GENERAL WITNESS INFORMATION BRIEFING *(Interviewer must read appropiate instructions to the witness)*

a. Promise of confidentiality offered.

(1) This accident investigation board has been convened under the provisions of AR 385-40 for the purpose of conducting a safety investigation.

(2) This may be just one of a number of investigations being conducted regarding this accident; collateral or legal investigations may be ongoing as well. Those investigations are entirely separate from a safety investigation and are also required to inform you of their purpose and of your legal rights.

(3) This safety investigation is being conducted for accident prevention purposes only. Within the military, pursuant to Army Regulation 385-40, it cannot be used for any other purpose, to include any future disciplinary actions against any individuals. Therefore, the interview you are being asked to provide will be used by the Army in the interest of safety and accident prevention only.

(4) Nonconfidential witness interviews may be released to the public pursuant to a Freedom of Information Act request. If you wish to protect your interview from public release outside the military, then your interview must be pursuant to a promise of confidentiality. Confidentiality means that your interview will not be released to the public or outside DOD safety channels.

(5) Whether your interview is confidential or not, the chain of command will review the final accident report, which may include a summary of your interview, but the chain of command may only use the investigation report and the interviews for safety and accident prevention purposes.

(6) If you ever have knowledge that your witness interview was used by the Army for anything other than accident prevention purposes (for example, disciplinary action against an individual), you should consult with your local Judge Advocate Defense Counsel Office and request that the Command Judge Advocate, U.S. Army Safety Center, be notified at DSN 558-3960 or commercial (205) 255-3960.

(7) The promise of confidentiality is available to you if you desire it. Do you desire it?

b. No promise of confidentiality offered.

(1) This accident investigation board has been convened under the provisions of AR 385-40 for the purpose of conducting a safety investigation.

(2) This may be just one of a number of investigations being conducted regarding this accident; collateral or legal investigations may be ongoing as well. Those investigations are entirely separate from a safety investigation and are also required to inform you of their purpose and of your legal rights.

(3) This safety investigation is being conducted for accident prevention purposes only. Within the military, pursuant to Army Regulation 385-40, it cannot be used for any other purpose, to include any future disciplinary actions against any individuals. Therefore, the interview you are being asked to provide will be used by the Army in the interest of safety and accident prevention only.

(4) The chain of command will review the final accident report, which may include a summary of your interview, but the chain of command may only use the investigation report and the interviews for safety and accident prevention purposes. The interview summary may be released to the public pursuant to a Freedom of Information Act request.

(5) If you ever have knowledge that your witness interview was used by the Army for anything other than accident prevention purposes (for example, disciplinary action against an individual), you should consult with your local Judge Advocate Defense Counsel Office and request that the Command Judge Advocate, U.S. Army Safety Center, be notified at DSN 558-3960 or commercial (205) 255-3960.

16. AVAILABILITY OF PROMISE OF CONFIDENTIALITY FOR "LIMITED USE" REPORT OF INVESTIGATION

a. Pursuant to AR 385-40, witness interviews may only be used within the military for purposes of accident prevention, and may not be used as evidence in connection with any administrative or disciplinary proceeding. This protection alone does not prevent release of the interview outside of the military (to the public, newsparers, attorneys, etc.) under the Freedom of Information Act. If you wish to protect your interview from release outside of the military, then your interview must be pursuant to a promise of confidentiality.

b. If you do not wish a promise of confidentiality, you may decline such below. In that case, your interview will still be used in the military only for purposes of accident prevention, but it may be released outside of the military in response to a Freedom of Information Act request. Please indicate which option you desire by initialing one of the choices below:

_____ I request a promise of confidentiality. I understand that the results of my interview will be used within the military only for the purposes of accident prevention, and will also be protected from public release outside of the military under the Freedom of Information Act.

_____ I decline a promise of confidentiality. I understand that the results of my interview will be used within the military only for purposes of accident prevention. I also understand that the results may be publicly released outside of the military under the Freedom of Information Act.

_____

Name of witness *(Print)*

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT

PART VI - WRECKAGE DISTRIBUTION

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-309

1. GRID: SHOW MAJOR GOUGE MARKS, DISTRIBUTION OF WRECKAGE, OBSTACLES, DIRECTION OF NORTH, WIND DIRECTION, WIND VELOCITY, POSITION OF WITNESS, ETC.

Suggested Scale: 1" Equals 50' Actual Scale: 1" Equals _____

2. CASE NO.	a. DATE *(YYMMDD)*	b. Time	c. Acft Serial No.	3. OTHER AIRCRAFT SERIAL NO.

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT

PART VII - IN-FLIGHT OR TERRAIN IMPACT AND CRASH DAMAGE DATA

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL CSOCS-309

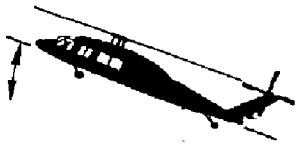
1. IN-FLIGHT COLLISION KINEMATICS AT INSTANT OF IMPACT

a. Airspeed At Impact *(knots)*

b. Vertical Speed *(feet per minute)* _____ ☐ Up ☐ Down

c. Flight Path Angle *(degrees)* _____ ☐ Up ☐ Down

d. In-Flight Attitude At Impact

(1) Pitch Angle 

Degrees _____ ☐ Up ☐ Down

(2) Roll Angle 

Degrees _____ ☐ Left ☐ Right

f. Obstacle Strike Sequence *(Enter 1, 2, 3, etc. to show sequence of strike)*

_____ Prop/Rotor	_____ Landing Gear
_____ Rotor Mast	_____ Wing
_____ Tail Rotor	_____ Empennage
_____ Tail Boom	_____ WSPS
_____ Windscreen	_____ FLIR
_____ LWR Nose/Gun Turret	_____ Other *(Specify)*

g. Obstacle Conspicuity *(Within accident distance from pilot's position, the obstacle in its surroundings was obscured)*

(1) ☐ Completely (2) ☐ Partially (3) ☐ Not Obscured

e. Obstacle Identity And Collision Height

Obstacle	Collision Height Above Ground *(feet)*
(1) ☐ Birds	
(2) ☐ Aircraft	
(3) ☐ Wires/Cables	
(4) ☐ Vehicles	
(5) ☐ Tree	
(6) ☐ Other	

h. Wire or Cable Description

Type	Dia In Inches	No. Struck
(1) Power Transmission		
(2) Telephone or TV		
(3) Bracing *(guy/support)*		
(4) Other *(Specify)*		

i. WSPS (1) Installed ☐ Yes ☐ No (2) Cut Wire ☐ Yes ☐ No

j. Obstacle Struck Other Than Wire *(diameter in inches)*

2. TERRAIN COLLISION KINEMATICS AT INSTANT OF MAJOR IMPACT

a. Ground Speed at Impact _____ *(knots)*

b. Vertical Speed ☐ Up ☐ Down _____ *(FPM)*

c. Flight Path Angle ☐ Up ☐ Down _____ *(degrees)*

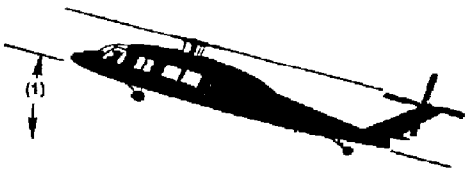
d. Indicate by Check Marks Which Two of The Three Preceding Parameters *(a, b, c)* Are The Most Accurate

a. ☐ b. ☐ c. ☐

e. Impact Angle _____ *(degrees)*

f. Attitude at Major Impact

(1) Pitch

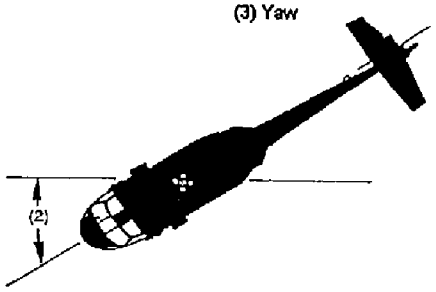


Degrees ____ ☐ Up ☐ Down

2) Roll

Degrees ____ ☐ Left ☐ Right

(3) Yaw



Degrees ____ ☐ Left ☐ Right

3. ROTATION AFTER MAJOR IMPACT

a. Did Aircraft Rotate About Any Axis After The Above Major Impact *(If yes, complete items b, c, and d)* ☐ Yes ☐ No ☐ Unknown

b. Roll Degrees	c. Yaw Degrees	d. Pitch Degrees
☐ Left ☐ Right Degrees _____	☐ Left ☐ Right Degrees _____	☐ Up ☐ Down Degrees _____

4. IMPACT FORCES RELATIVE TO AIRCRAFT AXES *(G's)*

a. Vertical *(G's)*	b. Longitudinal *(G's)*	c. Lateral *(G's)*
☐ Up ☐ Down G's _____	☐ Fore ☐ Aft G's _____	☐ Left ☐ Right G's _____

5. CASE NO.	a. Date *(YYMMDD)*	b. Time	c. Acft Serial No.	6. OTHER ACFT SERIAL NO.

7. FUSELAGE INWARD DEFORMATION OR COLLAPSE AND INJURY RELATIONSHIP *(Check appropriate boxes)*

Fuselage Area	Amount or Type of Deformation or Collapse	Specific Area of Deformation or Collaspse				Fuselage Deformation Produced/Contributed to Injury			
		Cockpit (1)	Forward Cabin Area (2)	Mid Cabin Area (3)	Rear Cabin Area (4)	Cockpit (5)	Forward Cabin Area (6)	Mid Cabin Area (7)	Rear Cabin Area (8)
a. Roof	Up to 1 Foot								
	More Than 1 Foot But Less Than 3 Feet								
	More Than 3 Feet Foot								
b. Left Side	Up to 1 Foot								
	More Than 1 Foot								
c. Right Side	Up to 1 Foot								
	More Than 1 Foot								
d. Nose	Up to 1 Foot								
	More Than 1 Foot								
e. Floor	Up to 1 Foot								
	More Than 1 Foot								
f. Floor *(local deformation under seats)*	Vertical								
	Sideward								
	Forward/Rearward								

8. LARGE COMPONENT DISPLACEMENT *(Check appropriate boxes)*

Component	Displaced (1)	Torn Free (2)	Cockpit Penetrated/Entered (3)	Cabin Penetrated/Entered (4)
a. Transmission *(forward or main)*				
b. Transmission *(rear)*				
c. Rotor Blade *(forward or main)*				
d. Rotor Blade *(rear or tail)*				
e. Landing Gear *(specify location)*				
f. Other *(specify)*				

9. POSTCRASH FLAMMABLE FLUID SPILLAGE

a. Equipped With Crashworthy Fuel System ☐ Yes ☐ No

b. If So Equipped, Did Breakaway Valves Separate as Designed ☐ Yes ☐ No ☐ NA

c. Flammable Fluid Spillage Occurred ☐ Yes ☐ No

d. Auxiliary Fuel tanks Installed ☐ Yes ☐ No ☐ Internal ☐ External Crashworthy ☐ Yes ☐ No

e. Amount and Type Fluid Spilled

Gallons	Fuel *(Type)*	Oil *(Type)*	Hyd Fluid *(Type)*	Other *(Specify)*
0 - 1				
> 1 - 2				
> 2 - 10				
> 10 - 20				
> 20				

10. SPILLAGE SOURCE

Part	a. Part Name/Nomenclature	b. Part Number	c. National Stock No.
(1) Cell/Tank/Reservoir			
(2) Filter			
(3) Fitting			
(4) Fluid Line			
(5) Value			
(6) Breakaway Valve			
(7) Other *(Specify)*			
(8) Other *(Specify)*			
(9) Other *(Specify)*			

11. REMARKS

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT

PART VIII - MAINTENANCE AND MATERIEL DATA

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-309

1. AIRCRAFT HISTORY	
a. Hours Since New	
b. Hours Since Last Major Repair	
c. Last Phase Inspection *(YYMMDD)*	
d. Hours Flown Since Last Phase Inspection	
e. Organization Completing Last Phase Inspection *(UIC)*	

2. CAUSATIVE ROLE	D Definite	S Suspected	U Unknown
a. Materiel			
b. Maintenance			
c. Design			
d. Manufacture			

3. FAILED OR MALFUNCTIONED MATERIEL

Identification	Major Component	Part	Identification	Major Component	Part
a. Nomenclature			h. TAMMS Data		
b. Type, Design, Series			(1) No. of Overhauls		
c. Part Number			(2) Date of Last Overhaul *(YYMMDD)*		
d. NSN			(3) Hrs Since Overhaul		
e. MFG Code			(4) Hrs Since New		
f. Serial Number			(5) Hrs Since Last Installed		
g. TM Data			(6) Date Last Installed *(YYMMDD)*		
(1) TM Number			(7) Last Overhaul Facility		
(2) Date *(YYMMDD)*			(8) Last Special Insp *(Type)*		
(3) Functional Group			(9) Hrs Since Last Special Inspection		
(4) Figure Number			(10) Date of Last Spec Inspection *(YYMMDD)*		
(5) Item Number			i. Type/Mode of Failure/Malfunction		
			j. Cause of Failure/ Malfunction		
			k. QDR/EIR Number		

4. WARNING SYSTEM AND INDICATION OF FAILURE/MALFUNCTION

a. Status of Aircraft Warning System for This Part ☐ Operative ☐ Inoperative ☐ NA

b. Indications of Failure/Malfunction ☐ Correct ☐ Incorrect ☐ None

c. Initial Indication of Failure/Malfunction

☐ (1) Vibration	☐ (3) Attitude	☐ (5) Odor	☐ (7) Smoke or Fire	☐ (9) Warning System
☐ (2) Noise	☐ (4) Inspection	☐ (6) Fluid	☐ (8) Other	☐ (10) None/Other

5. TEARDOWN ANALYSIS	a. Organization Performing	b. USASC Control No.

6. REMARKS *(Use additional sheet if required)*

7. CASE NO.	a. Date *(YYMMDD)*	b. Time	c. Acft Serial No.	8. OTHER ACFT SERIAL NO.

DA FORM 2397-7-R, JUL 94

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT
PART IX - PERSONAL DATA

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-309

1. ROLE OF THIS INDIVIDUAL

a. Errors That Caused/Contributed to Accident	b. On Controls When Accident Occurred
☐ Definitely ☐ Suspected ☐ None ☐ Undetermined	☐ Yes ☐ No ☐ Undetermined

2. BACKGROUND DATA

a. Age		g. Hours Worked Last 24 Hours	
b. Hours Awake Prior to Accident		h. Hours Worked Last 48 Hours	
c. Hours Duration Last Sleep Period		i. Hours Worked Last 72 Hours	
d. Hours Slept Last 24 Hours		j. Hours Flown Last 24 Hours	
e. Hours Slept Last 48 Hours		k. Hours Flown Last 48 Hours	
f. Hours Slept Last 72 Hours		l. Hours Flown Last 72 Hours	

3. CREWMEMBER DATA

a. Primary Acft MTDS		j. NVG Qualified ☐ Yes ☐ No	
b. Alternate Acft MTDS		k. Date Qualified In Acdt MTDS *(YYMMDD)*	
c. Additional Acft MTDS		l. ATM Task Number Associated With Initial Indication of Emergency	
d. FAC ☐ 1 ☐ 2 ☐ 3		Last Performed *(YYMMDD)*	
e. RL In Accident Acft MTDS ☐ 1 ☐ 2 ☐ 3 ☐ NA		m. ATM Task Number Involved In Response To Emergency	
f. APART Completed *(YYMMDD)*		Last Performed *(YYMMDD)*	
g. Physical Exam Completed *(YYMMDD)*		n. Medical Waiver ☐ Yes ☐ No	
h. Most Recent Evaluation Flight In Accident MTDS Acft *(YYMMDD)*		o. Post-Accident Flight Eval *(YYMMDD)* Result	
i. MTDS Acft Flown In Last 60 Days	(1)	p. Post-Accident Medical Exam/Autopsy *(YYMMDD)*	
	(2)		
	(3)	q. Required Lab Tests Accomplished ☐ Yes ☐ No	

4. FLIGHT AND CREW DUTY EXPERIENCE *(Round off to the nearest hour)*

a. Type Experience And Time	Rotary Wing	Fixed Wing	Total	Imminent Danger	Combat	Acdt Aircraft Hrs Design	Series
(1) Military							
(2) Civilian							
(3) Total Hours							

b. Duty Experience

Duty	CP	PI	PC	UT	IP	IE	SP	MP	ME	XP
Total Hours										

c. Flight Condition Experience

Condition	D	N	H	W	NG	DG	NS	DS	TR	AA
Total Hours										

d. Monthly Flight Hours Past 3 Months In Accident Acft MTDS

Date	Prev 90	Prev 60	Prev 30	This Mo.
Hours				

e. Other Crew Duty Experience

Duty	CE	OR	AO	MO	FI	SI
Total Hours						

5. MAINTENANCE AND SUPPORT PERSONNEL DATA

a. PMOS		Title	f. Civilian Job Series or Title
b. SMOS		Title	
c. DMOS		Title	Performance Standards Met For This Task
d. Deficient Task No.			☐ Yes ☐ No
e. MOS Verification (1) SQT/SDT ☐ Go ☐ No Go			
(2) Overall Percentile _____%			

6. CASE NO.	a. Date *(YYMMDD)*	b. Time	c. Acft Serial No.	7. OTHER ARCFT SERIAL NO.

DA FORM 2397-8-R, JUL 94

8. LABORATORY TESTS				
Type Test	Specimen Tested	Results	Name of Drug	USASC Code Block
a. Carbon Monoxide				
b. Alcohol/Volatiles				
c. Drug Screen				
d. Other				

9. HISTORY OF DISEASES/DEFECTS							
Diagnosis	Method of Discovery				Waivers		USASC Code Block
	Anl Phy	Sick Call	Autopsy	Other	Auth.	Date (YYMMDD)	

10. REMARKS

11. NAME *(Last, First, MI)*	12. SSN	13. GRADE	14. SEX	15. DUTY	16. SVC	17. UIC

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT

PART X - INJURY/OCCUPATIONAL ILLNESS DATA

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-309

1. DEGREE OF INJURY *(Check only the most severe injury)*

a. ☐ Fatal
b. ☐ Permanent Total Disability
c. ☐ Permanent Partial Disability
d. ☐ Lost Workday *(Days away from work)*
e. ☐ Workday of Restricted Activity
f. ☐ No Lost Workday or Restricted Activity
g. ☐ First Aid Only
h. ☐ Missing and Presumed Dead

2. NUMBER OF LOST WORKDAYS	a. Days Away From Work	b. Days Hospitalized	c. Days of Restricted Activity

3. UNCONSCIOUS	Hrs	Min	☐ None	4. AMNESIA	Hrs	Min	☐ None

5. INJURIES	Injuries					Mechanism		Cause Factors		
Seq No. a.	Body Region b.	Primary Aspect c.	Secondary Aspect d.	Inj Type/Result e.	Abbreviated Injury Scale f.	Action g.	Qualifier h.	Subject i.	Action j.	Qualifier k.

6. REMARKS *(Use additional sheet if required)*

7. AUTOPSY PERFORMED	a. ☐ Yes b. ☐ No	8. CAUSE OF DEATH	9. DUTY STATUS	a. ☐ On Duty b. ☐ Off Duty

10. NAME *(Last, First, MI)*	11. SSN	12. GRADE	13. SEX	14. DUTY	15. SVC	16. UIC

17. CASE NO.	a. Date *(YYMMDD)*	b. Time	c. Acft Serial No.	18. OTHER ACFT SERIAL NO.	19. INJURY COST

DA FORM 2397-9-R, JUL 94

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT
PART XI - PERSONNEL PROTECTIVE/ESCAPE/SURVIVAL/RESCUE DATA

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-309

1. DID THIS INDIVIDUAL SUSTAIN AN INJURY OR OCCUPATIONAL ILLNESS BECAUSE OF ACCIDENT? ☐ Yes ☐ No
(NOTE: If "yes" box is checked, ensure a DA Form 2397-9-R is completed for this individual)

2. PERSONNEL PROTECTIVE/RESTRAINT/SURVIVAL EQUIPMENT

Item	Type (1)	Required (2)	Available (3)	Used (4)	Produced Injury (5)	Allowed Injury (6)	Prevented Injury (7)	Reduced Injury (8)	Functioned as Designed (9)	Information Codes (10)
a. Helmet										
b. Visor										
c. Glasses										
d. Flight Suit										
e. Flight Gloves										
f. Flight Jacket										
g. Boots										
h. Other Clothing										
i. Lap Belt										
j. Shoulder Harness										
k. Gunner Harness										
l. Inertia Reel										
m. Seat/Litter										
n. Survival Equipment										
o.										
p.										

3. PERSONNEL EVACUATION/ESCAPE

	Information Codes
a. Method of Escape	
b. Location in Aircraft	
c. Exit Attempted	
d. Exit Used	
e. Aircraft Attitude During Escape	
f. Cockpit/Cabin Conditions	
g. Escape Difficulties	

4. LAPSED TIME FOR RESCUE

	Date		Hour of Day		Lapsed Time	
	MM	DD	HR	MIN	HR	MIN
a. Notification of Rescue Personnel						
b. Individual Physically Reached						
c. Individual Actually Aboard Rescue Vehicle						
d. Rescue Completed/Abandoned						

5. DISTANCE FROM ACCIDENT TO ACTUAL RESCUE VEHICLE AT TIME OF ACCIDENT

a. To Aircraft in Nautical Miles

b. To Ground Vehicle in Statute Miles

6. PERSONNEL SURVIVAL/RESCUE

	Information Codes
a. Survival Problems Encountered	
b. Means Used to Locate Individual	
c. Rescue Equipment Used	
d. Factors That Helped Rescue	
e. Factors Complicating Rescue	
f. Individual Physical Condition	
g. Vehicles Actually Performing Evacuation *(Specify)*	
h. Other Vehicles Assisting in Rescue *(Specify)*	

7. REMARKS *(Use additional sheet if required)*

8. NAME *(Last, First, MI)*	9. SSN	10. GRADE	11. SEX	12. DUTY	13. SVC	14. UIC

15. CASE NO.	a. DATE *(YYMMDD)*	b. Time	c. Acft Serial No.	16. OTHER ACFT SERIAL NO.

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT

PART XII - WEATHER/ENVIRONMENTAL DATA

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL CSOCS-309

1. ENVIRONMENTAL ROLE *(Check "D, S, U, or N" to Indicate Definite, Suspected, Undetermined, or None)*

a. Weather Role ☐ D ☐ S ☐ U ☐ N

b. Other Environmental Condition *(Specify in blk 9)* ☐ D ☐ S ☐ U ☐ N

2. GENERAL DATA AT TIME OF OCCURRENCE

a. Temperature °C *(est)*	d. Pressure Altitude *(+or-)*
b. Altimeter Setting *(HG)*	e. ☐ IMC ☐ VMC
c. Altimeter Reading *(MSL)*	

3. SKY CONDITION

a. Clear		d. Overcast (feet)	
b. Scattered (feet)		e. Partial Obscuration	
c. Broken (feet)		f. Obscuration	

4. HORIZON

a. Visible		c. Obscured	
b. Partially Obscured			

5. VISIBILITY *(Naut. miles)*

6. OBSTRUCTION TO VISION

a. Natural		(7) Blowing Dust	
(1) Dust		(8) Blowing Sand	
(2) Fog		(9) Blowing Snow	
(3) Ground Fog		(10) Sun	
(4) Haze		(11) Rain	
(5) Ice Fog		(12) Other *(Specify)*	
(6) Smoke		(13) None	
b. Induced (rotorwash, etc.)			
(1) Blowing Snow		(4) Blowing Spray	
(2) Blowing Sand		(5) Other *(Specify)*	
(3) Blowing Dust		(6) None	

7. WINDS

a. Aloft *(at en route altitude)* Dir _____ Velocity _____

b. Surface Winds (1) Surface Wind Dir. and Variance

(2) Surface Wind Velocity and Gust Spread *(KT)*

8. SIGNIFICANT WEATHER *(a maximum of three may be selected)*

a. Hail		h. Thunderstorm	
b. Sleet		i. Gusty Winds	
c. Fog		j. Freezing Rain	
d. Drizzle		k. Other *(Specify)*	
e. Rain		l. Unknown	
f. Snow		m. None	
g. Lightning			

9. OTHER ENVIRONMENTAL CONDITIONS PRESENT DURING ACCIDENT SEQUENCE

a. Animals		h. Foreign Objects	
b. Fowl		i. Temperature	
c. Surface		j. Vibration	
d. Noise		k. Dust	
e. Chemicals		l. Other *(Specify)*	
f. Radiation		m. None	
g. Glare			

10. AIRCRAFT ICING

☐ None ☐ Yes

	Icing Severity			
	Trace (1)	Light (2)	Moderate (3)	Servere (4)
a. Main Rotor Blades				
b. Wings				
c. Propellers				
d. Control Surfaces				
e. Rotor Head				
f. Tail Rotor				
g. Fuselage				
h. Pilot Static System				
i. Aileron				
j. Engine Air Inlet				
k. Fuel Vents				
l. Antenna				
m. Windscreen				
n. Other				

11. MOON ILLUMINATION DATA *(for night accidents)*

a. Moon Above Horizon ☐ Yes ☐ No

b. Moon Visible ☐ Yes ☐ No

c. Moon ____ Degrees Above Horizon

d. Percent of Moon Illumination

e. Moon ____ O'clock Position From Flight Path/Nose of Aircraft

f. Time *(LCL)* of Moon Rise and Set ____ L Rises ____ L Sets

12. TURBULENCE

☐ None ☐ Yes *(If "Yes" check "C" for continuous, "I" for intermittent, and "O" for occasional)*

	C	I	O
a. Light			
b. Moderate			
c. Severe			
d. Extreme			
e. None			

13. FORECAST ☐ Correct ☐ Incorrect ☐ Unknown

14. REMARKS *(Use additional sheet if required)*

15. CASE NO.	a. Date *(YYMMDD)*	b. Time	c. Acft Serial No.

DA FORM 2397-11-R, JUL 94

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT

PART XIII - FIRE DATA *(To be completed for all events involving fire)*

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-309

1. FIRE STARTED *(Check D - Definite S - Suspected)*	D	S
a. Inflight		
b. Upon Impact *(Less than 1 minute)*		
c. Upon Impact *(More than 1 minute)*		
d. During Refueling		
e. Other *(Specify)*		
f. Undetermined		

2. INDICATIONS OF FIRE
(More than one may apply. Enter 1, 2, or 3 to show sequence)

a. ☐ Fire Warning System d. ☐ Smell g. ☐ Other *(Specify)*
b. ☐ Other Instruments e. ☐ Explosion *(Sound)*
c. ☐ Sight f. ☐ External Commo

3. INITIAL AND PRINCIPAL LOCATION OF FIRE *(Enter 1 to indicate initial location, 2 to indicate principal location)*	D	S
a. Engine Section		
b. Transmission Section		
c. Cockpit		
d. Tail Assembly		
e. Passenger Section		
f. Baggage Compartment		
g. External Stores		
h. Ammunition Stores		
i. Avionic Section		
j. APU		
k. Wheel Well		
l. Wheel Brake		
m. Tail Pipe		
n. Instrument Panel		
o. Battery Compartment		
p. Heater Compartment		
q. Fuel Cell *(Specify)*		
r. Wing		
s. Gun Turret		
t. Tail Boom		
u. Cargo Section		
v. Tires		
w. Other *(Specify)*		
x. Undetermined		

4. IGNITION SOURCE	D	S
a. Exhaust Flames		
b. Sparks, Friction, e.g., Skidding		
c. Electrical Sparks		
d. Hot Surfaces, e.g., Exhaust Ducts		
e. Aircraft Subsystem		
f. Aircraft Occupant, e.g., Lighted Cigar		
g. External of Aircraft, e.g., Grass Fire		
h. Cargo		
i. Explosives		
j. Short Circuit		
k. Lightning		

4. IGNITION SOURCE *(Continued)*	D	S
l. Static Electricity		
m. Other *(Specify)*		
n. Undetermined		

5. COMBUSTIBLE MATERIAL	D	S
a. Main Fuel		
b. Auxiliary Fuel		
c. Hydraulic Fluid		
d. Engine Oil		
e. Transmission Oil		
f. Electrical Insulation		
g. Acoustical Materials		
h. Metal *(Specify)*		
i. Explosives		
j. Upholstery Materials		
k. Cargo		
m. External Material *(Specify)*		
n. Other *(Specify)*		
o. Undetermined		

6. FIRE EXTINGUISHING SYSTEM	a. Gnd	b. Aircraft	
		Inst	Port
(1) No Effect When Discharged			
(2) Activated, But Did Not Discharge			
(3) Reduced Fire			
(4) Extinguished Fire			
(5) Not Activated And Not Near Fire			
(6) Not Activated, But Near Fire			
(7) Not Installed			

7. FIRE SMOKE DETECTION SYSTEM	Yes	No	Undet
a. System Installed			
b. Warning System Operated Properly			
c. Sensors Within Range of Smoke/Fire			

8. EFFECT OF EMER SHUTOFF PROCEDURE *(Enter D, S, or U)*	Eng	Fuel	Elect
a. Extinguished Flame			
b. Reduced Fire			
c. No Effects			
d. Not Accomplished			
e. Used Faulty Procedure			

9. GENERAL DATA

a. Est of Aircraft Fire Damage *(Excl of impact damage)*
☐ 0-25% ☐ 26-50% ☐ 51-75% ☐ 76-100%

b. Fire Dimension: To Clear Fire, Aircraft Occupants Had To Move *(feet)*:

c. Toxicity: Was There Evidence of Toxic Products?
☐ Yes ☐ No

d. Distance To Nearest Available Military Firefighting Equipment
(1) Air Miles *(NM)*: (2) Road Miles *(SM)*:

e. G-Force Activated Fire Extinguishing System Functioned As Designed
☐ Yes ☐ No ☐ NA

10. REMARKS *(Use additional sheet if required)*

11. CASE NO.	a. Date *(YYMMDD)*	b. Time	c. Acft Serial No.	12. OTHER ARCFT SERIAL NO.

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT

INDEX A

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-309

1. MISSION, TYPE, DESIGN, AND SERIES	2. CASE NO.	a. Date *(YYMMDD)*	b. Time	c. Acft Serial No.

3. TAB	Information	Encl	Not Applic	See Remarks
1	Copy of Orders Appointing Investigating Board			
2	Weather Data			
3	Certificate of Damage/ECOD			
4	Diagrams and/or Photographs			
5	Copy of Deficiency Reports			
6	Special Technical Reports and Laboratory Analysis			
7	Weight and Balance *(DD Form 365-4)*			
8	Copy of Directives, Regulations, Etc.			
9	Medical Data *(Autopsy, Toxicology, AFIP, etc.)*			
10	Flight Planning Data *(flight plan, mission briefing, PPC, risk assessment, etc.)*			
11	Copy of Army Aviator's Flight Record *(DA Form 2408-12)*			
12	Copy of Aircraft Inspection and Maintenance Record *(DA Form 2408-13)*			
13	Copy of Uncorrected Fault Record *(DA Form 2408-14)*			
14	Copy of Equipment Modification Record *(DA Form 2408-5)*			
15	Other *(Specify)*			
16	Other *(Specify)*			
17	Other *(Specify)*			
18	Other *(Specify)*			

4. REMARKS

TECHNICAL REPORT OF U.S. ARMY AIRCRAFT ACCIDENT

INDEX B

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-309

1. MISSION, TYPE, DESIGN, AND SERIES	2. CASE NO.	a. Date *(YYMMDD)*	b. Time	c. Acft Serial No.

3. TAB	Title	DA Form No.	Encl	Not Appl	See Remarks
a.	Statement of Reviewing Officials	2397-R			
b.	Summary of Accident	2397-1-R			
c.	Findings and Recommendations	2397-2-R			
d.	Accident Narrative	2397-3-R			
e.	Summary of Witness Interviews	2397-4-R			
f.	Wreckage Distribution Data	2397-5-R			
g.	In-Flight or Terrain Impact and Crash Damage Data	2397-6-R			
h.	Maintenance and Materiel Data	2397-7-R			
i.	Personal Data	2397-8-R			
j.	Injury Occupational Illness Data	2397-9-R			
k.	Personal Protection/Escape/Survival/Rescue Data	2397-10-R			
l.	Weather	2397-11-R			
m.	Fire Data	2397-12-R			

4. REMARKS

5. BOARD MEMBERS

a. President *(Name and Signature)*	SSN			Address and Tel No.
	Grade	Br	Rating	
b. Recorder *(Name and Signature)*	SSN			Address and Tel No.
	Grade	Br	Rating	
c. Flight Surgeon *(Name and Signature)*	SSN			Address and Tel No.
	Grade	Br	Rating	
d. Instructor Pilot *(Name and Signature)*	SSN			Address and Tel No.
	Grade	Br	Rating	
e. Maint Officer *(Name and Signature)*	SSN			Address and Tel No.
	Grade	Br	Rating	
f. Other *(Name and Signature)*	SSN			Address and Tel No.
	Grade	Br	Rating	

DA FORM 2397-14-R, JUL 94

ABBREVIATED AVIATION ACCIDENT REPORT *(AAAR)*

FOR ALL CLASS C, D, E, F, COMBAT A AND B, AND ALL AIRCRAFT GROUND

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL CSOCS-309

COMPLETE BLKS 1 - 18 FOR ALL ACDTS. NO FURTHER ENTRY IS REQUIRED FOR CLASS D, E, AND F ACDTS NOT INVOLVING HUMAN ERROR/INJURY.

1. DATE/CASE NO. OF ACCIDENT	a. *(YYMMDD)*	b. Time *(Lcl)*	c. Acft Ser No.	2.	a. Classification ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F b. Category ☐ Flight ☐ Flight Related ☐ Acft Ground

3. TYPE OF ACFT (MTDS)	4. PERIOD OF DAY ☐ Dawn ☐ Day ☐ Dusk ☐ Night	5. NO. ACFT INVOLVED	6. NEAREST MIL INSTALLATION

7. ACCIDENT LOCATION	a. ☐ On-Post ☐ Off-Post	b. ☐ On Airfield ☐ Not on Airfield	c. City *(Nearest to acdt site)*	d. State	e. Country *(If not USA)*

8. ORGANIZATION INVOLVED

a. Name of Unit	b. UIC *(6 Digit Unit Id Code)*	C. Home Station	d. MACOM

9. ORGANIZATION DEEMED ACCOUNTABLE *(If same as block 8 leave blank)*

a. Name of Unit	b. UIC *(6 Digit Unit Id Code)*	C. Home Station	d. MACOM

10. ESTIMATED ACCIDENT COST a. Acft Total Loss ☐ Yes ☐ No

b. Acft Damage *(Excl man hr)*	c. No. Man Hrs	d. Man Hr	e. Other Damage Mil	f. Civilian Damage	g. Injury	h. Total *(This acft)*	i. Total *(All acft)*
$		$	$	$	$	$	$

11. GEN. DATA	a. Msn	(1) Type *(Tng, Svc, etc.)*	(2) ☐ Single-ship ☐ Multi-ship	b. Flight Plan ☐ NA ☐ VFR ☐ IFR	c. Flight Data Recorder Installed ☐ Yes ☐ No	d. Night Vision Device/System In use ☐ Yes ☐ No If "Yes" specify type

e. Fire ☐ None ☐ Inflight ☐ Postcrash ☐ Other

f. Flammable Fluid Spillage *(If "Yes" for Class A, B, and C acdts,* YES ☐ NO ☐

g. Field Training Exercise *(FTX)* ☐ Yes ☐ No If "Yes" Name of FTX _____

12. FLIGHT DATA	Flight Duration	Phase of Operation *(Enter max of 3 codes from fig 3-5 DA Pam 385-40 or specify phase (e.g., hover, NOE, etc.)*	Altitude AGL	Airspeed KIAS	Aircraft Weight	Overgross for Conditions Yes	Overgross for Conditions No
a. At Emergency	Hours Tenths						
b. At Impact/Acdt or Termination	Hours Tenths						

13. TYPE EVENTS *(Enter max 3 codes from fig 3-4 DA Pam 385-40 or specify type event which best describes the acdt/incdt, e.g., tree strike, generator failure, eng overspeed, hard landing, fuel exhaustion, dropped cargo, oil cooler bearing failure, etc.)*

14. ACCIDENT CAUSE FACTORS *(Enter D, S, or U to identify Definite, Suspected, or Undetermined causes)*	a. Human Error *(If D or S complete blks 21, 23, & 24)*		b. Materiel Failure/Malfunction *(Includes mfg/design induced failures) (If D or S complete blk 16)*		c. Environmental *(If D or S complete blk 17)*	

15. SUMMARY *(Enter summary of acdt sequence from onset of emergency through termination of flight. For Class D, E, and F, include the type of materiel failure and/or environmental factors.)*

16. COMPONENT AND PART FAILURE/MALFUNCTION DATA *(part that initiated failure/malfunction.)*

Identification	Major Component	Part
a. Nomenclature		
b. Type, Design, and Series		
c. Part Number		
d. NSN		
e. Manufacturer's Code		
f. Part Serial No.		
g. Cause Failure/ Malfunction	(1) ☐ Materiel (2) ☐ Maintenance (3) ☐ Design (4) ☐ Manufacture	FGCODE *(USASC)* / TYPEFL / CAUFL

17. ENVIRONMENTAL *(Chk conditions at time of acdt.)*

a. General *(1)* ☐ IMC *(2)* ☐ VMC *(3)* ☐ Unknown

b. Environmental Conditions

(1) Weather Conditions		(2) Other Conditions	
(a) Hail		(a) Animals	
(b) Sleet		(b) Fowl	
(c) Fog		(c) Surface	
(d) Drizzle		(d) Noise	
(e) Rain		(e) Chemicals	
(f) Snow		(f) Radiation	
(g) Lightning		(g) Glare	
(h) Thunderstorm		(h) FOD	
(i) Gusty Winds		(i) Temperature	
(j) Freezing Rain		(j) Vibration	
(k) Other		(k) Dust	

c. Acft Icing ☐ No ☐ Yes d. Turbulence ☐ No ☐ Yes

18. BOARD PRESIDENT/ASO/POC *(Name, Signature, and Date)*	SSN	Address and Tel No. *(DSN and Com)*
	Grade / Branch	

DA FORM 2397-AB-R, JUL 94

COMPLETE BLKS 19 - 26 FOR ALL CLASS C, COMBAT CLASS A, B, ACFT GROUND CLASS A, B, C, AND ALL CLASS ACDTS INVOLVING HUMAN ERROR/INJURY.

19. MOON ILLUMINATION DATA *(For night Class A, B, or C acdts. If blk a. is "no", no other entry is required.)*

a. Moon Above Horizon	b. Moon Visible	c. Moon *(Degrees Above Horizon)*	d. Percent of Moon Illumination	e. Moon *(Clock Position from Flight Path/Nose of Acft)*
☐ ☐	☐Yes ☐No	_____	_____ %	_____

20. WIRE STRIKE DATA *(If "no" in blk a. no other entry is required)*

a. Wire Strike	b. WSPS Installed	c. WSPS Engaged Wire	d. WSPS Cut Wire	e. WSPS Functioned as Designed	f. Wires Struck
☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	No. _____ Dia (inches) _____

21. PERSONNEL DATA *(Complete for each crewmember with access to flt controls or other personnel injured or having a contributing role in the accident; use additional forms as needed)*

a. Name (last, first, MI)	(1) SSN	(2) Grade	(3) Sex	(4) Duty	(5) SVC	(6) UIC *(Assigned)*	(7) Contributing Role ☐D ☐S ☐N ☐U

(8) On Flt Controls	(9) Lab Test *(Blood/urine; for pos attach AFIP report)*	(10) Activity *(Last 24 Hrs)*	(a) Hrs Slept / (b) Hrs Worked	(c) Hrs Flown	(11) (a) RL ☐1 ☐2 ☐3 (b) FAC ☐1 ☐2 ☐3	(12) Injury *(If "yes" complete DA Form 2397-9-R)*	(13) Tot Flt Hrs (acdt MTDS)
☐Yes ☐No	☐Pos ☐Neg					☐Yes ☐No	

b. Name (last, first, MI)	(1) SSN	(2) Grade	(3) Sex	(4) Duty	(5) SVC	(6) UIC *(Assigned)*	(7) Contributing Role ☐D ☐S ☐N ☐U

(8) On Flt Controls	(9) Lab Test *(Blood/urine; for pos attach AFIP report)*	(10) Activity *(Last 24 Hrs)*	(a) Hrs Slept / (b) Hrs Worked	(c) Hrs Flown	(11) (a) RL ☐1 ☐2 ☐3 (b) FAC ☐1 ☐2 ☐3	(12) Injury *(If "yes" complete DA Form 2397-9-R)*	(13) Tot Flt Hrs (acdt MTDS)
☐Yes ☐No	☐Pos ☐Neg					☐Yes ☐No	

c. Name (last, first, MI)	(1) SSN	(2) Grade	(3) Sex	(4) Duty	(5) SVC	(6) UIC *(Assigned)*	(7) Contributing Role ☐D ☐S ☐N ☐U

(8) On Flt Controls	(9) Lab Test *(Blood/urine; for pos attach AFIP report)*	(10) Activity *(Last 24 Hrs)*	(a) Hrs Slept / (b) Hrs Worked	(c) Hrs Flown	(11) (a) RL ☐1 ☐2 ☐3 (b) FAC ☐1 ☐2 ☐3	(12) Injury *(If "yes" complete DA Form 2397-9-R)*	(13) Tot Flt Hrs (acdt MTDS)
☐Yes ☐No	☐Pos ☐Neg					☐Yes ☐No	

22. IMPACT/PROTECTIVE/ESCAPE/SURVIVAL/RESCUE DATA *(For Class A, B, and C acdts)*

a. Acft Occupiable Space Compromised *(If "yes" DA Form 2397-6-R required)* ☐Yes ☐No	b. Escape/Survival Difficulties *(If "yes" DA Form 2397-10-R required for the individual)* ☐Yes ☐No	c. Protective/Restraint Equip Functioned as designed *(If "no" DA Form 2397-10-R required for the individual)* ☐Yes ☐No

23. ACDT CAUSE FACTORS *(Blk 24 must support all cause factors checked; See DA Pam 385-40 for definition of cause factors)*

a. ☐Training Failure *(Stds exist but not known or ways to achieve them not known)*	b. ☐Standards Failure *(Stds not clear, practical, or do not exist)*	c. ☐Leader Failure *(Stds are known but not enforced)*	d. ☐Individual Failure *(Stds known but not followed)*	e. ☐Support Failure *(Inadequate equip/ facilities/svcs/no or type personnel)*

24. FINDINGS AND RECOMMENDATIONS *(See instructions in DA Pam 385-40 for writing findings and recommendations. Use additional sheet if required)*

USASC use only	Duty	Role ☐ D ☐ S	Failure/error Code	SI 1	RM 1	RM 2	RM 3
	Phase of OP	Task/part no.		SI 2	RM 1	RM 2	RM 3

25. LIST OF ATTACHMENTS *(CCAD, DA Forms 2397-4, 8, 9, etc.)*

26. COMMAND REVIEW *(Required for Class A and B combat and all Class C acdts. Use separate sheet for non-concurrence, additional findings, and recommendations.)*

Reviewer	Organization	Name (Typed/Printed)	Rank	Signature	Comments
a. Unit Commander					☐ Concur ☐ Non-concur
b. Reviewing Official					☐ Concur ☐ Non-concur
c. Approving Authority					☐ Approved ☐ Disapproved
d. DA Review	U S Army Safety Center				Approved for entry into ASMIS *(YYMMDD)*

U.S. ARMY ACCIDENT REPORT
SUMMARY OF WITNESS INTERVIEW

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-308

1. NAME OF WITNESS *(LAST, FIRST, MI)*	2. OCCUPATION/TITLE	3. GRADE	4. SSN	5. AGE

6. ADDRESS *(Include ZIP Code) (If military, include organization)*	7. TELEPHONE NUMBER
	8. DATE OF INTERVIEW

9. EXPERIENCE AND BACKGROUND	10. LOCATION AT TIME OF ACDT	11. INTERVIEWER

12. Was a promise of confidentiality offered to the witness? ☐ **Yes** ☐ **No** *(If yes, read blk 15a to the witness and complete blk 16. If no, read blk 15b to the witness.)* **Confidentiality was requested by the witness.** ☐ **Yes** ☐ **No** *(If Yes, interviewer sign and date statement below.)*

THE WITNESS MADE THIS STATEMENT UNDER A PROMISE OF CONFIDENTIALITY.

_____ _____
Signature of Interviewer **Date**

13. SUMMARY OF INTERVIEW

14. DATE OF ACCIDENT (*YYMMDD*)

15. GENERAL WITNESS INFORMATION BRIEFING *(Interviewer must read appropiate instructions to the witness)*

a. Promise of confidentiality offered.

(1) This accident investigation board has been convened under the provisions of AR 385-40 for the purpose of conducting a safety investigation.

(2) This may be just one of a number of investigations being conducted regarding this accident; collateral or legal investigations may be ongoing as well. Those investigations are entirely separate from a safety investigation and are also required to inform you of their purpose and of your legal rights.

(3) This safety investigation is being conducted for accident prevention purposes only. Within the military, pursuant to Army Regulation 385-40, it cannot be used for any other purpose, to include any future disciplinary actions against any individuals. Therefore, the interview you are being asked to provide will be used by the Army in the interest of safety and accident prevention only.

(4) Nonconfidential witness interviews may be released to the public pursuant to a Freedom of Information Act request. If you wish to protect your interview from public release outside the military, then your interview must be pursuant to a promise of confidentiality. Confidentiality means that your interview will not be released to the public or outside DOD safety channels.

(5) Whether your interview is confidential or not, the chain of command will review the final accident report, which may include a summary of your interview, but the chain of command may only use the investigation report and the interviews for safety and accident prevention purposes.

(6) If you ever have knowledge that your witness interview was used by the Army for anything other than accident prevention purposes (for example, disciplinary action against an individual), you should consult with your local Judge Advocate Defense Counsel Office and request that the Command Judge Advocate, U.S. Army Safety Center, be notified at DSN 558-3960 or commercial (205) 255-3960.

(7) The promise of confidentiality is available to you if you desire it. Do you desire it?

b. No promise of confidentiality offered.

(1) This accident investigation board has been convened under the provisions of AR 385-40 for the purpose of conducting a safety investigation.

(2) This may be just one of a number of investigations being conducted regarding this accident; collateral or legal investigations may be ongoing as well. Those investigations are entirely separate from a safety investigation and are also required to inform you of their purpose and of your legal rights.

(3) This safety investigation is being conducted for accident prevention purposes only. Within the military, pursuant to Army Regulation 385-40, it cannot be used for any other purpose, to include any future disciplinary actions against any individuals. Therefore, the interview you are being asked to provide will be used by the Army in the interest of safety and accident prevention only.

(4) The chain of command will review the final accident report, which may include a summary of your interview, but the chain of command may only use the investigation report and the interviews for safety and accident prevention purposes. The interview summary may be released to the public pursuant to a Freedom of Information Act request.

(5) If you ever have knowledge that your witness interview was used by the Army for anything other than accident prevention purposes (for example, disciplinary action against an individual), you should consult with your local Judge Advocate Defense Counsel Office and request that the Command Judge Advocate, U.S. Army Safety Center, be notified at DSN 558-3960 or commercial (205) 255-3960.

16. AVAILABILITY OF PROMISE OF CONFIDENTIALITY FOR "LIMITED USE" REPORT OF INVESTIGATION

a. Pursuant to AR 385-40, witness interviews may only be used within the military for purposes of accident prevention, and may not be used as evidence in connection with any administrative or disciplinary proceeding. This protection alone does not prevent release of the interview outside of the military *(to the public, newsparers, attorneys, etc.)* under the Freedom of Information Act. If you wish to protect your interview from release outside of the military, then your interview must be pursuant to a promise of confidentiality.

b. If you do not wish a promise of confidentiality, you may decline such below. In that case, your interview will still be used in the military only for purposes of accident prevention, but it may be released outside of the military in response to a Freedom of Information Act request. Please indicate which option you desire by initialing one of the choices below:

_____I request a promise of confidentiality. I understand that the results of my interview will be used within the military only for the purposes of accident prevention, and will also be protected from public release outside of the military under the Freedom of Information Act.

_____I decline a promise of confidentiality. I understand that the results of my interview will be used within the military only for purposes of accident prevention. I also understand that the results may be publicly released outside of the military under the Freedom of Information Act.

_____

Name of witness *(Print)*

U.S. ARMY ABBREVIATED GROUND ACCIDENT REPORT *(AGAR)*

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENT CONTROL SYMBOL
CSOCS-308

1. TIME & DATE OF ACCIDENT	a. Yr	b. Mth	c. Day	d. Time	2. PERIOD OF DAY	Day	Night	3. ACDT CLASS	4. ACDT OCCURRED DURING:	Combat	Non-Combat
5. UNIT IDENTIFICATION	a. UIC *(6-digit Code)*		b. Name of Unit			c. Unit's Branch			d. MACOM		
6. LOCATION OF ACCIDENT	a. Exact Location *(Detailed enough to locate site)*								b. Type Location		
c. State/Country	d.	Off Post	On Post Name:			7. EXPLOSIVES/AMMO	a. Present	Yes	No	b. Involved	Yes	No
8. MISSION	a. Briefly describe the misson								b. METL Task?	Yes	No

9. VEHICLE/EQUIPMENT/MATERIEL INVOLVED — Materiel Failure/Malfunction Information

a. Type of Item (Nomenclature)	b. Model #	c. Ownership	d. Estimated Cost of Damage	e. Vehicle Collision	f. Failure Mode	g. Part Nomenclature	h. Part #	i. Part NSN	j. Part Manufacturer Code	k. EIR/QDR Submitted
#1										Yes / No
#2										Yes / No

10. WHY DID THE MATERIEL FAIL/MALFUNCTION ? *(Check the root cause(s) in Block a. In Block b, explain how the root cause(s) led to the materiel failure/malfunction.)*

a.	LEADER *(Not ready, willing to enforce standards)*		STDS/PROCEDURES *(Not clear, Not practical)*		SUPPORT *(Shortcomings in type, capability, amount or condition of equip/supplies/services/facilities)*		
	Direct Supervision		AR		SOP		Equip/Materiel improperly designed		Inadequate Manufacture
	Unit Command Supervision		TM		Other		Equip/Materiel not provided		Inadequate Maintenance
	Higher Command Supervision		FM		None exists		Inadequate Facilities/Services		Other

b. Describe how the materiel failed/malfunctioned and explain why *(root cause)*

11. NAME (Last, First, MI) (Include Address & UIC if different than Blks 5a & b.)	12. SOCIAL SECURITY #	13. PERSONNEL CLASSIFICATION	14. MOS	15. DUTY STATUS	On-duty	Off-duty
		16. AGE	17. SEX	18. PAY GRADE	19. FLIGHT STATUS	Yes / No
	20. MOST SEVERE INJURY *(See Instructions)*	a. Degree	b. Type	c. Body Part	d. Cause	

21. DAYS HOSPITALIZED	ACTIVITY OF INDIVIDUAL *Provide code (from list in instructions) and describe in space below*	
	23.CODE	24. SPECIFIC DESCRIPTION OF ACTIVITY/TASK
22. WORKDAYS		
a. Lost		
b. Restricted		

25. PERSONAL PROTECTIVE EQUIP	26. ALCOHOL/DRUGS CAUSED/CONT	Yes	No	Unk	27. EQUIP THIS PERSON WAS ASSOCIATED WITH? *(Enter item No. from Blk 9a)*

a. Required	b. Type of equip	c. Available	d. Used	28. LICENSED TO OPERATE EQUIP	29. HRS ON DUTY	30. HRS SLEEP	31. TACTICAL TRAINING	32. TYPE TRAINING FACILITY	33. LAST TRAINING	34. FIELD TRAINING EXERCISE	35. NIGHT VISION SYSTEM USED
Yes / No	#1 / #2	#1 / #2	#1 / #2	Yes / No			Yes / No			Yes / No If Yes, provide name:	Yes / No If Yes, provide name:

36. DID INDIVIDUAL MAKE A MISTAKE THAT CAUSED/CONTRIBUTED TO ACCIDENT? *In Blk a, indicate if individual made a mistake. If yes provide the code (from instructions) in Blk b. and describe in Blk c.*

a. Mistake Yes / No	c. Tell what the mistake was and how it caused/contributed to the accident
b. Code	

DA FORM-285-AB-R, JUL 94

37. WHY WAS THE MISTAKE MADE *(ROOT CAUSE) (Check the root cause(s) in Blk a. In Blk b. tell how the root cause(s) led to the mistake.)*

a.	LEADER *(Not ready, willing to enforce standards)*		TRAINING *(Insufficient in Content/Amount)*		STDS/PROCEDURES *(Not clear/Not practical)*		SUPPORT *(Shortcomings in type, capability, amount or condition of equip/supplies/services/facilities)*		INDIVIDUAL *(Mistake due to own personal factors)*	
	Direct Supervision		School		AR	SOP	Equip/Materiel improperly designed	Inadequate Manufacture	Poor/Bad attitude	Fatigue
	Unit Command Supervision		Unit		TM	Other	Equip/Material not provided	Inadequate Maintenance	Overconfident	Alcohol, Drugs
	Higher Command Supervision		Experience, OJT		FM	None exists	Inadequate Facilities/Services	Other	In a hurry	Fear/Excitement

b. Describe root cause*(s)* *(reason)* and tell how it/they caused the mistake

38. ENVIRONMENTAL CONDITIONS

a. Present:	b. Caused/Contributed?		
#1 ____	☐ Yes	☐ No	☐ Unk
#2 ____	☐ Yes	☐ No	☐ Unk
#3 ____	☐ Yes	☐ No	☐ Unk

39. PROVIDE BRIEF SYNOPSIS OF ACDT *(Use additional sheets if required) (Explain sequence of events, tell how acdt happened.)*

40. CORRECTIVE ACTIONS*(S)* TAKEN OR PLANNED

41. POINT OF CONTACT FOR INFORMATION ON THE ACCIDENT

a. Name (Last, First, MI)	b. Telephone # DSN: COM:

42. COMMAND REVIEW a. Name	c. Rank	43. SAFETY OFFICE REVIEW a. Name	b. Date
b. Signature	d. Date		

REVERSE OF DA FORM 285-AB-R, JUL 94

U.S. ARMY ACCIDENT REPORT

INDEX A

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-308

1. DATE OF ACCIDENT ***(YYMMDD)***

2. TAB	Information	Encl	Not Applic	See Remarks
1	Serious Incident/Casualty Report			
2	Copy of Orders Appointing Investigating Board			
3	Map of Accident Site			
4	Diagrams and/or Photographs			
5	Certificate of Damage/ECOD			
6	Copy of Deficiency Reports			
7	Copy of Directives, Regulations, Etc.			
8	Special Technical Reports and Laboratory Analysis			
9	Copy of Uncorrected Fault Record			
10	Copy of Equipment Modification Record *(DA Form 2408-5)*			
11	Weather Data			
12	Medical Data *(Autopsy, Toxicology, AFIP, etc.)*			
13	Other *(Specify)*			
14	Other *(Specify)*			
15	Other *(Specify)*			
16	Other *(Specify)*			
17	Other *(Specify)*			
18	Other *(Specify)*			

3. REMARKS

U.S. ARMY ACCIDENT REPORT
INDEX B

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-308

1. DATE OF ACCIDENT ***(YYMMDD)***

2. TAB	Title	Encl	Not Appl	See Remarks
A	Statement of Reviewing Officials *(DA Form 285-O)*			
B	U.S. Army Accident Report *(DA Form 285)*			
C	Findings and Recommendations			
D	Narrative of Accident			
E	Summary of Witness Interviews *(DA Form 285-W)*			

3. REMARKS

4. BOARD MEMBERS

a. President *(Name and Signature)*	SSN		Address and Tel No.
	Grade	Br	
b. Recorder *(Name and Signature)*	SSN		Address and Tel No.
	Grade	Br	
c. Flight Surgeon *(Name and Signature)*	SSN		Address and Tel No.
	Grade	Br	
d. Instructor Pilot *(Name and Signature)*	SSN		Address and Tel No.
	Grade	Br	
e. Maint Officer *(Name and Signature)*	SSN		Address and Tel No.
	Grade	Br	
f. Other *(Name and Signature)*	SSN		Address and Tel No.
	Grade	Br	

DA FORM 285-B-R, JUL 94

U.S. ARMY ACCIDENT REPORT

STATEMENT OF REVIEWING OFFICIALS

For use of this form, see AR 385-40 and DA Pamphlet 385-40; the proponent agency is OCSA

REQUIREMENTS CONTROL SYMBOL
CSOCS-308

1. REVIEWING OFFICIALS COMMENTS

2. APPROVING AUTHORITY COMMENTS

a. Signature

3. DEPARTMENT OF ARMY REVIEW

a. Signature

4. DATE OF ACCIDENT *(YYMMDD)*

DA FORM 285-O-R, JUL 94

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