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DISCOVERY OF MILITARY AIRCRAFT ACCIDENT INVESTIGATION REPORTS

RICHARD C. COYLE*

I. INTRODUCTION

THERE ARE significant differences between investigations of military aircraft accidents conducted by the military and civil aircraft investigations conducted by the National Transportation Safety Board.¹ These differences in investigation procedure lead not only to differences in the nature of the information that is developed and available to civil litigants, but also to differences in the way parties should go about obtaining that information. This article will first examine the nature of the military aircraft accident investigation process and the type of information it produces. Next, the case law dealing with the use of such information in private civil litigation will be reviewed. Finally, specific problem areas with regard to the use of such information will be discussed in detail.

II. THE MILITARY AIRCRAFT ACCIDENT INVESTIGATION PROCESS

The principle flying Armed Services—the Air Force and the Navy—use two-track procedures for investigating mili-

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¹ For a discussion of accident investigation procedures used by the National Transportation Safety Board, see 49 C.F.R. §§ 880-835, 845 (1983). See also Miller, *Aircraft Accident Investigation: Functions and Legal Perspectives*, 46 J. AIR L. & COM. 237 (1981).

tary aircraft accidents. These consist of (1) a largely confidential investigation conducted exclusively in the interest of aviation safety,² and (2) a privately conducted but publicly obtainable investigation conducted "to preserve available evidence for use in claims, litigation, disciplinary actions, administrative proceedings, and other purposes."³ Since Air Force and Navy procedures are largely parallel in this area, this section will focus on Air Force procedures by way of example. In the Air Force, the first investigation is called the "Safety Mishap Investigation."⁴ The second investigation is known as the "Aircraft Accident Investigation."⁵

A. *The Safety Mishap Investigation*

The Safety Mishap Investigation of a major aircraft acci-

² See *infra* text accompanying notes 6-16.

³ See *infra* text accompanying notes 18-23.

⁴ See Air Force Reg. 127-4. See Appendix A for the pertinent text of Air Force Reg. 127-4. The naval counterpart of the Air Force Aircraft Safety Mishap Report is the Aircraft Mishap Investigation Report conducted pursuant to the Naval Aviation Safety Program, OPNAV Instruction 3750.6N (April 26, 1984).

⁵ See Air Force Reg. 110-14. See Appendix B for pertinent text of Air Force Reg. 110-14. The navy counterpart of the Air Force's Aircraft Accident Investigation, generally limited to "non-mishap" occurrences, is the Aircraft Hazard Investigation, conducted pursuant to the Naval Aviation Safety Program, OPNAV Instruction 3750.6N, *supra* note 4. A "Naval Aircraft Mishap" is defined as

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404 NAVAL AIRCRAFT MISHAP DEFINED

a. A naval aircraft mishap is an unplanned event or series of events, directly involving naval aircraft which result in any of the following:

(1) Ten thousand Dollars or greater cumulative damage to naval aircraft, other aircraft (DOD or non-DOD), and property (DOD or non-DOD). Property damage includes costs to repair or replace facilities, equipment or material.

(2) An injury as defined in paragraph 407.

* * *

407 INJURY DEFINED

a. Traumatic bodily harm received while involved with naval aircraft, such as a cut, fracture, burns, or poisoning, resulting from a single or one day exposure to an external force, toxic substance, or physical agent, which results in:

(1) Fatality, regardless of the time between injury and death.

(2) Permanent total disability.

(3) Permanent partial disability.

(4) One or more lost workdays (not including the day of injury).

b. Consider only the following injuries in determining the severity clas-

dent is conducted by a board of Air Force officers appointed by the major command with responsibility for the aircraft.⁶ These are not specialists in investigating accidents, although under current procedures one member is from the Aerospace Safety Center at Norton Air Force Base. Generally, the board uses technical advisors from the Air Force Logistics Command at Tinker Air Force Base. Assistance from the prime contractor is frequently requested and obtained. By regulation, the sole purpose of this investigation is to find the cause of the accident to "prevent mishap recurrence."⁷

The safety investigation begins immediately after the accident and is generally complete within a few weeks. Most investigations are conducted along fairly standard lines and include examining the wreckage and aircraft maintenance records, personnel records and medical records; interviewing witnesses; preparing wreckage scatter and flight path diagrams, if feasible and pertinent; conducting teardowns of components whose functioning is suspect; documenting the positions of switches, instruments, and valves; and listening to the air traffic control tapes and obtaining transcripts and obtaining appropriate technical evaluations from the contractor.⁸

When completed the report consists of fill-in-the-blanks-type forms⁹ calling for a narrative description of findings, conclusions and recommendations. "Group reports" concerning various aircraft systems, and evaluations by contrac-

sification in any given naval aircraft mishap (refer to paragraph 415 for injury costing).

(1) All injuries to active duty, on or off duty, DOD military personnel (including reservists).

(2) All injuries to on duty DOD civilian personnel, including foreign nationals attached to the DOD.

(3) Fatal injuries to off duty DOD civilian personnel, off duty foreign nationals attached to the DOD, and non-DOD civilian personnel.

Naval Aviation Safety Program, OPNAV Instruction 3750.6N, at 4-3 to 4-6.

⁶ Air Force Reg. 127-4, Ch. 3, ¶ 3-4.

⁷ Air Force Reg. 127-4, Ch. 1, ¶ 1-9.

⁸ Air Force Reg. 127-4, Ch. 3, ¶¶ 3-5 - 3-10.

⁹ See Air Force Form 711 ("USAF Mishap Report") and Air Force Form 711b ("Aircraft Flight Mishap Report"), the preparation of which are described in Air Force Reg. 127-4, Ch. 12.

tors and witness statements are attached. A transcript is also made of the Board's deliberations.¹⁰

The Safety Board has no authority to subpoena or swear witnesses, either military or civilian. Witnesses who do give statements are given an assurance that their statements will be kept confidential and used only for accident prevention purposes.¹¹ The premise for this procedure is that witnesses will be more candid if they know their statements cannot later be used against them. The same premise applies to technical evaluations and other information obtained from civilian contractors.¹²

The Air Force takes the position that major portions of the information and report developed during the safety investigation are privileged from disclosure.¹³ This includes not only the opinions, conclusions and recommendations of the investigating board but also other subjects including witness statements from military and non-military witnesses and technical reports submitted by contractors in support of the investigation. According to the regulations, these materials are to be placed in Part II of the Report.¹⁴ Part I contains factual material which is generally releasable.¹⁵ The Air Force also takes the position that all work done by contractors in support of the safety investigation is privileged, including, for example, data developed by the contractor in response to an oral request and which does not result in the contractor supplying a written report.¹⁶ It also seems to be the position of the Air Force that this privilege belongs to the Government and cannot be waived by the contractor without the consent of the Air Force.¹⁷

¹⁰ *Id.*

¹¹ Air Force Reg. 127-4, Ch. 3, ¶ 3-5d.

¹² Air Force Reg. 110-14, ¶ 2 at 1-2.

¹³ *Id.*

¹⁴ Air Force Reg. 127-4, Ch. 12.

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ See *infra* text accompanying notes 24-58, 19.

B. *The Aircraft Accident Investigation*

The Aircraft Accident Investigation is conducted by an officer appointed for that purpose.¹⁸ The officer in charge of the Air Force Regulation 110-14 investigation is given access to the wreckage, Part I of the Safety Mishap Report, and the names of witnesses (but not the substance of their statements to the Safety Mishap Board).¹⁹

There was a time when the Air Force took the position that portions of the Aircraft Accident Report²⁰ were privileged from disclosure.²¹ These portions included opinions, analyses, speculations and recommendations of the Aircraft Accident Board.²² The current position of the Air Force is that Aircraft Accident Reports are releasable, but that the opinions, conclusions and recommendations of the investigator must not be included in the report.²³

III. HISTORY OF LITIGATION INVOLVING MILITARY ACCIDENT REPORTS

The seminal case in the area is *Machin v. Zuckert*,²⁴ decided by the Court of Appeals for the District of Columbia in 1963. *Machin* involved a subpoena issued to the Secretary of the Air Force to produce an accident investigation report for use in litigation to which the United States was not a party.²⁵ The court refused to order the production of "testimony of private parties," "any conclusions that might be based in any fashion on such privileged information," and "any portions of the report reflecting Air Force deliberations or recommendations as

¹⁸ See Air Force Reg. 110-14.

¹⁹ *Id.*

²⁰ The Accident Board Report was previously called the "Collateral Report" and is sometimes still referred to as such.

²¹ See generally text accompanying notes 24-60.

²² See Air Force Reg. 110-14.

²³ *Id.*

²⁴ 316 F.2d 336 (D.C. Cir.), cert. denied, 375 U.S. 896 (1963). An earlier case, *U.S. v. Reynolds*, 345 U.S. 1 (1953), was decided on the basis that the report was classified in the interest of national security. The armed services no longer take the position that their reports are classified documents so the utility of the *Reynolds* reasoning denying disclosure is limited.

²⁵ *Machin*, 316 F.2d at 337.

to policies that should be pursued."²⁶ On the other hand, the court held that the "factual findings of the Air Force mechanics who examined the wreckage" should be released, including "any 'opinions' or 'conclusions' as to possible defects."²⁷ The court ordered an *in camera* inspection of the mechanics' reports to determine what should be released.²⁸

The next case of significance involving military aviation accident reports was *O'Keefe v. Boeing Co.*²⁹ *O'Keefe* was decided in 1965 by the District Court of the Southern District of New York and involved the efforts of the plaintiffs to obtain portions of four investigation reports³⁰ which had found their way into the hands of the contractor.³¹ The portions the plaintiff sought included witness statements, group reports and the formal report.³² The United States intervened in order to assert a claim of privilege.³³ The court sustained the privilege as to "opinions, speculations, recommendations or discussions of Air Force policy" contained within the documents but denied the privilege as to "records of facts."³⁴ It is unclear whether the decision to require limited disclosure was based upon the absence of a privilege for the material whose disclosure was ordered or upon waiver of the privilege by giving the material to the contractor.

Kreindler v. Department of the Navy,³⁵ decided in 1973 by the same court, was the first reported Freedom of Information Act ("FOIA")³⁶ case involving military reports. The plaintiff in *Kreindler* represented a civilian killed in a Navy C-2A crash.³⁷ The Navy refused to produce any of the Safety Re-

²⁶ *Id.* at 339.

²⁷ *Id.* at 341 (Supplemental Opinion).

²⁸ *Id.*

²⁹ 38 F.R.D. 329 (S.D.N.Y. 1965).

³⁰ *Id.* at 330. The reports were compiled under Air Force Regulation 127-4.

³¹ *O'Keefe*, 38 F.R.D. at 332.

³² *Id.* at 332-33.

³³ *Id.* at 330.

³⁴ *Id.* at 336.

³⁵ 363 F.Supp. 611 (S.D.N.Y. 1973), *subsequent opinion*, 372 F. Supp. 333 (S.D.N.Y. 1974).

³⁶ 5 U.S.C. § 552 (1982).

³⁷ *Kreindler*, 363 F. Supp. at 611-12.

ports³⁸ or the opinions or recommendations of the JAG Manual Investigation Report.³⁹ The court ordered an *in camera* inspection of the withheld documents and then ordered significant portions of the reports released, including the witness statements.⁴⁰ The court could find no support in the FOIA for withholding such statements, notwithstanding the Navy's contention that they were covered either by exception Four for confidential commercial information⁴¹ or by exception Five for inter-agency memoranda.⁴² The court concluded that there was no reason — statutory or otherwise — to order non-disclosure of much of the material requested.⁴³ Thus, *Kreindler* parts company with *Machin* on the releasability of heretofore privileged witness statements, at least in the FOIA context.

In *Theriault v. U. S.*,⁴⁴ decided by the Court of Appeals for the Ninth Circuit under the FOIA, the trial court ordered full disclosures and the court of appeals reversed and remanded with directions to conduct an evidentiary hearing on the basis of a privilege claim.⁴⁵ Thereafter, the trial court held that certain "opinions, conclusions, and speculations" were exempt from disclosure, as were the transcripts of the Aircraft Accident Investigation Board's proceedings and witness statements given under a promise of confidentiality.⁴⁶ The court found authority for denying disclosure from FOIA exceptions Four and Five as well as "the spirit, if not the letter" of exception One relating to military secrets.⁴⁷

³⁸ *Id.* at 611-12. The court referred to the reports as the Aircraft Accident Report and the Judge Advocate General Manual Investigation Report.

³⁹ *Kreindler*, 363 F. Supp. at 611-12. The Navy equivalent of the Air Force Aircraft Accident Report is now the Aircraft Mishap Investigation Report, discussed *supra* note 4.

⁴⁰ *Kreindler*, 372 F. Supp. at 334-50.

⁴¹ *Kreindler*, 363 F. Supp. at 612. See also 5 U.S.C. § 552(b)(4).

⁴² *Kreindler*, 363 F. Supp. at 612. See also 5 U.S.C. § 552(b)(5).

⁴³ *Kreindler*, 372 F. Supp. at 334.

⁴⁴ 503 F.2d 390 (9th Cir. 1974), *on remand*, 395 F. Supp. 637 (C.D. Cal. 1975).

⁴⁵ *Id.* at 391-92.

⁴⁶ *Theriault*, 395 F. Supp. at 642.

⁴⁷ *Id.* at 641-42. See 5 U.S.C. § 552(b).

In *Rabbitt v. Department of the Air Force*,⁴⁸ the court first ordered the disclosure of witness statements in response to a FOIA request⁴⁹ and then reversed itself and declined to order their disclosure.⁵⁰ The court based its conclusion on FOIA exception Five and the policies contained in *Machin*.⁵¹ The court did conclude, however, that the plaintiff should be given the names and addresses of the witnesses whose statements had been taken and required the Air Force to offer to each witness the opportunity to review his or her statement and decide if he or she wanted the statement disclosed.⁵²

The Courts of Appeals for the Eighth and the Fifth Circuits employed reasoning similar to that utilized by the court in *Rabbitt* and refused to order production of witness statements in *Brockway v. Department of the Air Force*⁵³ and *Cooper v. Department of the Navy*.⁵⁴ However, in *Weber Aircraft Co. v. United States*,⁵⁵ the Ninth Circuit parted company with these circuits, disavowed earlier dictum of its own in *Theriault*,⁵⁶ and held that Safety Mishap Investigation witness statements, even though given under a promise of confidentiality, were not exempt from disclosure under FOIA.⁵⁷ Significantly, the court assumed the same statements would be exempt from civil discovery under *Machin*.⁵⁸ The decision therefore clearly implies that a civil litigant may actually be better off proceeding under FOIA for information rather than conducting discovery under the Federal Rules, a result that most would find anomalous. The United States

⁴⁸ 383 F. Supp. 1065 (S.D.N.Y. 1974), *subsequent opinion*, 401 F. Supp. 1206 (S.D.N.Y. 1975).

⁴⁹ *Id.* at 1067.

⁵⁰ *Rabbitt*, 401 F. Supp. at 1209.

⁵¹ *Id.* See *supra* notes 24-28 and accompanying text.

⁵² *Rabbitt*, 401 F. Supp. at 1209.

⁵³ 518 F.2d 1184 (8th Cir. 1975).

⁵⁴ 558 F.2d 274 (5th Cir. 1977), *modified on other grounds*, 594 F.2d 484, *cert. denied*, 444 U.S. 926 (1979).

⁵⁵ 688 F.2d 638 (9th Cir. 1982), [*rev'd*, 104 S. Ct. 1488 (1984)]. The United States Supreme Court handed down its decision after the date of publication of this article.

⁵⁶ See *supra* text accompanying notes 44-47.

⁵⁷ *Weber*, 688 F.2d at 644.

⁵⁸ *Id.*

Supreme Court has granted certiorari in *Weber*⁵⁹ and the matter was argued earlier this year.⁶⁰

IV. PROBLEM AREAS

This section will examine in more detail the principal areas of uncertainty with regard to the use and availability of the contents of military accident reports in private civil litigation. These areas include the current status of witness statements, the extent to which contractor reports are privileged and finally, the admissibility of Safety Mishap Reports.

A. *Witness Statements*

As pointed out by the Ninth Circuit in *Weber*⁶¹ there is no exemption from disclosure in the FOIA which easily covers the situation with respect to witness statements; thus, it may be determined by the Supreme Court in *Weber* that while such statements are not privileged from disclosure under the FOIA, they are not discoverable under the civil discovery procedures. An additional complicating factor is that the United States appears to be more inclined to take the position that the FOIA should not be used by civil litigants when they are in litigation with the United States and that requests for information should be directed to the United States' lawyers.

B. *Contractor Reports and Waiver*

Two key questions remain unresolved concerning contractor-generated reports. One is whether the contractor waives the privilege by retaining a copy of the report or by taking other action with respect to it, such as supplying the report to the counsel representing it in tort litigation. It is believed by this writer that merely retaining a copy of the report by the contractor is proper and does not waive any privilege, but that utilizing the report for purposes unrelated to aircraft

⁵⁹ *Weber*, 103 S. Ct. 353 (1983).

⁶⁰ The Supreme Court heard oral arguments in *Weber* on January 11, 1984 [and handed down an opinion in 104 S. Ct. 1488 (1984)].

⁶¹ See *supra* text accompanying notes 55-60. See *supra* text accompanying notes 6-17.

safety, for example, by showing it to counsel, is very likely to compromise the confidentiality of the report.

Second, the Air Force's position that a contractor cannot waive his privilege in civil litigation should he desire to utilize for his own purposes the report he generated must be rejected. While the contractor privilege has the overall goal of improving the safety of military operations, it is for the contractor's protection, in order to encourage the contractor's candor, that the exemption from disclosure for contractor-generated information exists. Thus, the contractor should be free to waive the privilege either *intentionally* because it desires a waiver, or *inadvertently* by mishandling the information. While no case has directly addressed the issue, the language of the *Brockway* and *Rabbitt* cases to the effect that witnesses may elect to reveal their testimony to a plaintiff asserting a right under the FOIA are consistent with this result.

C. *Non-Privileged Investigations*

In the Air Force there is no longer an issue regarding the confidentiality of the Safety Mishap Investigation.⁶² What is likely, however, to be a continuing issue is the admissibility of such reports under the Public Records exception of the hearsay rule.⁶³ This exception allows for the admissibility in civil actions of "factual findings resulting from an investigation made pursuant to authority granted by law"⁶⁴ If the military investigator were to follow strictly the dictates of Air Force Regulations,⁶⁵ which require that his "opinions, con-

⁶² See *supra* text accompanying notes 6-17.

⁶³ FED. R. EVID. 803(8), which states:

Records, reports, statements or data compilation, in any form, of public offices or agencies, setting forth (A) the activities of the office or agency, or (B) matters observed pursuant to duty imposed by law as to which matters there was a duty to report, excluding, however, in criminal cases matters observed by police officers and other law enforcement personnel, or (C) in civil actions and proceedings and against the Government in criminal cases, factual findings resulting from an investigation made pursuant to authority granted by law, unless the sources of information or other circumstances indicate lack of trustworthiness.

Id.

⁶⁴ FED. R. EVID. 803(8)(C), *quoted supra* note 63.

⁶⁵ Air Force Reg. 110-14.

clusions and recommendations" not be included in the report but that only a "factual summary of evidence" be included,⁶⁶ then it would seem by definition that such reports would be admissible in their entirety, assuming a sufficient showing of trustworthiness is made.⁶⁷ The difficulty with this approach is that in the real world reports are not written by lawyers and the mandated distinctions between opinions and conclusions, on the one hand, and factual findings, on the other, are not strictly followed, if it is even possible in all cases to do so. The evidentiary treatment to be given to military accident reports is a matter that has not yet received much attention in the courts but is likely to receive more in the future.

⁶⁶ *Id.*

⁶⁷ "Trustworthiness" is an additional requirement for admission under FED. R. EVID. 803(8)(C), *quoted supra* note 63.

APPENDIX "A"
AIR FORCE REGULATION 127-4
SAFETY INVESTIGATIONS

3-1. GENERAL INFORMATION. The Air Force conducts safety investigations to find the causes of mishaps in order to prevent recurrence. The investigating commander decides how much investigation is needed for each mishap, based on the guidelines in this chapter.

3-2. SCOPE OF INVESTIGATIONS. Several factors influence the scope of investigations. How severe was the injury, occupational illness, or damage? What is the probability of adverse public reaction? What is the future mishap potential? Will an investigation by another agency produce a report which can be used for Air Force mishap prevention? Investigating commanders should not feel committed to a full board investigation merely because one was appointed during the early phases. If it becomes apparent that a single investigator can do the job, the remaining board members may be released. Use the following guidelines to decide what kind of an investigation to convene:

A. SEVERITY OF INJURY, OCCUPATIONAL ILLNESS, DAMAGE. Mishaps which result from Air Force operations can be prevented more easily than those outside the sphere of direct Air Force influence. When mishaps result in severe injury or damage from Air Force operations, an extensive investigation is needed. Often, persons representing several investigative areas are needed to reconstruct the sequence of events, identify causes, and recommend preventive actions. For such complex investigations, commanders should normally convene boards. However, in some mishaps involving severe injury, illness, or damage, the causes and preventive actions may be evident at the outset of the investigation. In these cases, investigating commanders may decide to appoint individual investigators, rather than convening boards.

B. POSSIBLE ADVERSE PUBLIC REACTION. Air Force policy requires the public be fully informed of events which are adverse to the public interest. Such events include costly accidental losses of Air Force resources and serious injury or damage to non-Air Force people or property. Careful documentation of these mishaps is often so complex that board investigations are needed.

C. MISHAP POTENTIAL. The potential for mishap recurrence may suggest the need for a more extensive investigation, even though damage, injury, illness, or possible adverse public reaction may be minimal. Investigating commanders convene boards for mishaps when it seems that extensive documentation will be needed to support preventive actions.

D. INVESTIGATION BY OTHER AGENCIES. Mishaps occurring outside the direct sphere of Air Force influence may be investigated by other agencies. Although some level of reporting is required, an Air Force investigation may not be needed to acquire the information. The information for reports required by this regulation may often be extracted

directly from other investigation reports. These include reports of such other agencies as the local police and state highway patrol.

E. **CONTRACTOR MISHAPS.** When mishaps result from Government contractor operations and cause reportable losses to government resources, they must be investigated and reported:

(1) If the Air Force administers the contracts and mishaps involve reportable losses to Air Force resources, Air Force administration personnel will prepare the reports required by this regulation with as much information as available within the terms of the contract.

(2) If the Air Force administers the contracts and mishaps involve reportable losses to resources of other DOD agencies, Air Force administration personnel will forward all mishap information to the involved agency with an information copy to HQAFISC/SER.

(3) If another DOD agency administers the contracts, the contracting MAJCOM will make sure the loss is investigated and enter a record of mishap into the Air Force's mishap reporting system.

(4) When the mishap concerns government property in the contractor's possession, the contractor will not be required to provide information beyond the terms of the contract. Contractor mishaps must be investigated and reported even though the government is reimbursed in whole or part.

3-3. **INVESTIGATING OFFICERS.** They investigate and prepare reports of mishaps either individually or as members of boards. In either case, the investigating officer is a key to providing a credible report. During a safety investigation, the investigating officer is relieved of all other duties. He or she is furnished clerical and technical assistance, transportation, communications, and other facilities and services as necessary. Guidelines for appointing safety investigating officers are listed below. When a fully qualified individual is not available, the investigating officer is selected from the most qualified individuals available. If selected investigating officer does not have safety experience, investigation background, or working knowledge of AFR 127-4, the convening authority's safety staff should assist in details of compiling the formal report.

NOTE: The term Investigating Officer as used here includes noncommissioned officers (NCO) or civilians who are appointed to investigate ground and explosives mishaps.

A. **APPOINTING AIRCRAFT FLIGHT, MISSILE, SPACE, AND NUCLEAR SAFETY INVESTIGATING OFFICERS.** Each Air Force wing and higher level commander (and geographically separated unit commander) appoints one or more officer(s) to investigate these mishaps. Reserve force unit commanders appoint one or more Guardsmen or Reservists to investigate these mishaps. When a Class A mishap is investigated by a single investigating officer, he or she is selected in the same manner as a board president (paragraph 3-4a). Investigating officers for Class B and C mishaps

may be selected from within the organization that had the mishap. This also applies to all FOD mishaps.

B. APPOINTING INVESTIGATING OFFICERS FOR GROUND, EXPLOSIVES, AND AIRCRAFT NONFLIGHT MISHAPS. Each Air Force base, wing, and higher level commander appoints one or more qualified investigators for ground, explosives, and aircraft nonflight mishaps. Reserve force unit commanders also appoint one or more qualified investigators for ground and explosives mishaps.

C. INVESTIGATING OFFICER AND NCO QUALIFICATIONS:

(1) For Flight Mishap. Must be rated officer with at least 4 years rated service as a pilot or navigator. Preferably, he or she should be a graduate of the USAF Flight Safety Officers' Course or the USAF Aircraft Mishap Investigation Course. Current or previous qualification in the mishap aircraft is desirable.

EXCEPTION: Safety NCOs or civilians may investigate Class C and HAP flight mishaps when no operator factor is involved.

(2) For a Missile Mishap. Should be a missile maintenance or operations officer, munitions officer, or missile safety officer. For air launched missile or RPV aircraft mishaps, the flight safety officer may be the investigating officer.

(3) For a Space Mishap. Should be a missile maintenance, missile/space system engineer, or operations officer.

(4) For a Nuclear Mishap. Should be an officer qualified in storage, maintenance, transportation, operation, or loading and mating of the weapon system involved. For nuclear power systems or minor radioactive sources, the investigating officer should know the nuclear system or materials and the related hazards involved.

(5) For a Ground, Aircraft Nonflight, or Ground (Missile or Space involvement) Mishap. May be a ground safety officer (military or civilian), or NCO, maintenance officer, or rated officer, as appropriate. The investigating commander may appoint an NCO to investigate the mishap, provided that person is senior to the individual(s) involved in the mishap. The NCO must either be from a unit not involved in the mishap or from the next higher supervisory echelon of the unit that had the mishap. (The local safety staff will provide assistance.)

(6) For an Explosives Mishap. Should be an officer or civilian who knows the effects and technical aspects of the design, construction, properties, use, and functioning of all items involved. The investigator should be trained or experienced in mishap investigation. Class B explosives or missile mishaps involving aircraft damage during flight may be investigated by a flight safety officer.

3-4. INVESTIGATING BOARDS. The investigating commander decides whether the mishap should be investigated by an individual or a board. If a comprehensive effort is indicated, an investigation board is convened.

When a board is convened, the board member activities prescribed by this regulation take precedence over all their other duties.

A. APPOINTING SAFETY INVESTIGATION BOARD PRESIDENTS. Each Air Force base, wing, and higher level commander keeps a list of personnel qualified for safety investigation boards. Only required basic members need to be listed. Flight, missile, space, and nuclear boards are not established below wing or equivalent level (see paragraph 1-5c). Follow these instructions for appointing investigation board presidents for Class A flight, missile, and space mishaps and nuclear accidents:

(1) The board president is appointed from officer resources other than those of the wing or equivalent organization that had the mishap.

(2) If the first level below the major command is a wing or equivalent level(or lower), the board president is appointed by the major command.

B. GENERAL INSTRUCTIONS FOR ESTABLISHING A SAFETY INVESTIGATING BOARD. (AFR 11-31 does not apply.)

(1) The size and membership of the board depends on the kind of mishap being investigated. Paragraph c through f below describes basic board membership for most types of mishaps. For a more complex mishap, a group board may be needed. In this case, span of control problems can be minimized by using the basic board voting members as a coordination group. The coordination group leader is normally the investigating officer. The remaining coordination group members are normally the leaders of subgroups, such as operations, materiel, human factors, and so forth. The additional voting and nonvoting board members are assigned or attached to these subgroups. This organization structure is suggested, but not mandatory. Investigating commanders may organize group boards in any way which fits their investigative and reporting needs.

(2) Each board should have one or more members equal to or senior in rank to the senior person directly involved in the mishap. Normally, the board president is the senior board member.

(3) Board members should not have a personal interest in the investigations; each should be able to act impartially.

(4) Each board must have a member qualified to investigate each safety area when more than one is involved.

(5) The system manager or item manager and any involved test organization decide if they will take part in the investigation. If so, they inform the investigating major commander, preferably within 24 hours after the mishap.

C. AIRCRAFT FLIGHT SAFETY INVESTIGATION BOARD. Boards for flight mishaps are made up of the following members:

(1) Required Basic Membership. The following are voting members:

(a) A Board president who is a rated pilot or navigator. For Class A flight mishaps, the president is a colonel or higher.

(b) An investigating officer qualified as in paragraph 3-3c(1).

(c) A pilot member currently on flying status and qualified in the involved aircraft.

(d) A maintenance member, who is a fully qualified maintenance officer with 2 years maintenance experience in the involved aircraft.

(e) A medical officer qualified in aerospace medicine.

(2) Additional Voting Members Required Under Certain Conditions:

(a) An air traffic control officer when air traffic control is known or suspected to have been a factor in the mishap. The convening authority will coordinate with HQAFCC/AT when an air traffic control officer is required.

(b) A weather officer when weather or weather service is known or suspected to have been a cause of the mishap.

(c) A munitions officer, EOD officer or NCO, or nuclear safety officer if a nuclear weapon or warhead is involved.

(d) A representative of the commander whose aircraft or operator was involved in the mishap if that commander so requests.

(e) An officer knowledgeable in nuclear power systems or minor radioactive sources if such systems are involved.

(f) An AFOTEC representative when AFOTEC managed OT&E is involved.

(3) Required Nonvoting Members:

(a) An officer or senior noncommissioned officer familiar with administrative procedures is the board recorder.

(b) A life support officer if life support equipment may be involved.

(c) Representatives of the Directors of Aerospace Safety or Nuclear Surety when those organizations decide to take part.

(d) Representatives of aircraft system or item managers of Air Force test organizations when those organizations decide to take part.

(e) Representatives from the FAA or NTSB when those organizations request participation. (See AFR 127-11.)

(f) A safety advisor if a trained safety officer is not already a member of the flight safety investigating board.

(4) Optional Assistance at the Investigating Commander's Discretion:

(a) Additional crewmembers qualified in the involved aircraft.

(b) Technical personnel in the areas of research, development, testing, production, or logistic support of the aircraft, or with expertise in the design deficiency.

D. MISSILE MISHAP INVESTIGATING BOARD:

(1) Required Basic Membership. Each board has at least voting members as follows:

(a) An officer qualified in missile maintenance, engineering, or munitions.

(b) An officer qualified in the operational use of the missile system.

(c) A medical services officer, qualified in aerospace medicine. If the missile mishap is clearly due to materiel failure, the medical member is not required. Another officer qualified in missile maintenance and engineering is substituted.

(2) Additional Voting Members Required Under Certain Conditions. (Same as for flight board.)

(3) Optional Assistance at the Investigating Commander's Discretion. The following may be invited as advisors or consultants (nonvoting members) to the investigating board:

(a) Representatives from other federal agencies.

(b) Technical personnel in the areas of research, development, testing, production, or logistic support of the missile or missile support equipment.

(c) Representatives of missile system or item managers or Air Force test organizations when organizations decide to take part.

(d) Additional nonvoting members, as required.

(4) If a trained weapons safety officer or specialist is not a member of the missile safety investigating board, appoint one as a safety advisor, nonvoting member.

(5) The board composition for missile mishaps involving Class A or B aircraft damage during flight may be established in accordance with paragraph 3-4c.

E. SPACE MISHAP INVESTIGATING BOARD:

(1) Required Basic Membership. Each board has at least three voting members as follows:

(a) An officer qualified in missile maintenance, or missile/space system engineering.

(b) An officer qualified in the operational use of space system.

(c) A medical services officer, qualified in aerospace medicine. If the space mishap is clearly due to materiel failure, the medical member is not required. Another officer qualified in space systems is substituted.

(2) Additional voting members required under certain conditions. (Same as for flight board.)

(3) Optional assistance at the Investigating Commander's discretion. The following may be invited as advisors or consultants (nonvoting members) to the investigating board:

(a) Representatives from the federal agencies.

(b) Technical personnel in the areas of research, development, testing, production, or logistics support of the space system or space system support equipment.

(c) Representatives of space systems or item managers or Air Force test organizations decide to take part.

(d) Additional nonvoting members, as required.

(4) If a trained safety officer or specialist is not a member of the space systems investigating board, appoint one as a safety advisor, non-voting member.

F. NUCLEAR MISHAP INVESTIGATING BOARD:

(1) Required Basic Membership for a Nuclear Weapon Mishap. For a nuclear weapon mishap not occurring together with a flight or missile mishap, use at least the following four voting members:

(a) An officer qualified in the operation of the nuclear weapon carrier.

(b) An officer qualified in storage, maintenance, transportation, or loading and mating of the weapon system.

(c) An EOD officer or NCO.

(d) A nuclear safety investigating officer.

(2) Membership for Nuclear Power System or Minor Radioactive Source Mishaps. At least the following two voting members are required:

(a) An officer knowledgeable of the reactor or radioisotope system.

(b) A medical services officer or health physicist knowledgeable in radiation effects and contamination.

(3) Additional Membership Required Under Certain Conditions:

(a) A Department of Energy (DOE) representative when DOE-DOD agreements apply for the system involved.

(b) A medical officer for human factors and other medical aspects.

(c) Additional specialists as required by the nature of the mishap.

(4) Other required Nonvoting Members. Same as c(3) above.

G. GROUND, EXPLOSIVES, OR AIRCRAFT NONFLIGHT MISHAP INVESTIGATING BOARDS:

(1) Required Membership. The board consists of at least the following:

(a) A president in the grade of major/GS-12 or higher. If a field grade officer is not available, the investigating commander may waive the grade requirement.

(b) An investigating officer qualified as in paragraph 3-3b, but preferably a flight, ground or explosives safety officer, as applicable.

(c) A medical services officer knowledgeable in the medical or environmental health factors involved. If it is clear that environmental

health or medical factors are not involved, a medical services officer is not required.

(d) A motor vehicle maintenance officer, if a motor vehicle is involved.

(e) A security and law enforcement officer (for a motor vehicle mishap).

(f) An EOD officer or NCO, as appropriate.

(g) A technician qualified in munitions maintenance if materiel failure or design deficiency is suspected to be the cause of an explosives mishap. This technician should be familiar with the design, construction, properties, use, and functioning of all explosives items involved.

(h) An AFOTEC representative when AFOTEC managed OT&E is involved.

(2) Optional Assistance at the Investigating Commander's Discretion. Other technical personnel depending on the nature of the mishap.

(3) The board composition for explosives mishaps involving Class A or B aircraft damage during flight may be established in accordance with paragraph 3-4c.

H. AUTHORITY FOR INTERSERVICE USE OF PERSONNEL IN MISHAP INVESTIGATIONS:

(1) There is sometimes a need for the Navy, Army, or Coast Guard to take part in an Air Force mishap investigation. This happens when the aircraft, facilities, material, or personnel of another US military service are involved. In such mishaps, both the Air Force and the other service have a vested interest. Authority to use other military services personnel is requested from the Directorate of Aerospace Safety or Nuclear Surety. If authority is granted the non-Air Force member personally engages in the investigation and aids in the preparation of the report. The investigation and the report are done according to this regulation. An extra copy of the report is sent to the Director of Aerospace Safety or Nuclear Surety for forwarding to the other service.

(2) Collisions between an Air Force aircraft and an aircraft of another service may be investigated by a joint board. This requires mutual agreement between the two safety centers. Reports are prepared on the individual forms and in the formats required by each service. The wording of findings may vary to fit the needs of the individual services. However, the meaning of the findings or cause factors must not conflict.

(3) If, for any reason, a joint board cannot be convened, two independent investigations are conducted using each service's reporting directive. An extra copy of the report is sent to the Director of Aerospace Safety for forwarding to the other service.

(4) Sometimes a flight mishap involves an aircraft common to another US military service (see table 4-3). Personnel from the other service may be asked to take part in the Air Force investigation as "an ob-

server(s).” The investigating commander makes this request through the Director of Aerospace Safety. The invitation is then extended to the safety center of the other service. An invited observer(s) is not a member of the board. An extra copy of the report is sent to the Director of Aerospace Safety for forwarding to the other service.

I. CONDUCT OF AN INVESTIGATION IN WHICH NATIONAL TRANSPORTATION SAFETY BOARD (NTSB) OR FEDERAL AVIATION ADMINISTRATION (FAA) RESPONSIBILITIES ARE INVOLVED:

(1) When mishaps occur between Air Force and civil aircraft, the NTSB is responsible for the investigation. The NTSB provides for the Air Force to participate, at the discretion of the Director of Aerospace Safety (see AFR 127-11). If the Air Force takes part in such an investigation or public hearing, it does so as “a party to” the investigation or hearing. The Air Force may conduct a separate and independent investigation according to this regulation. The Air Force investigation must not interfere with the NTSB investigation. The Air Force board president complies with AFR 127-11 when requesting information from, or releasing information to, the NTSB.

(2) A military flight mishap may involve a function of the FAA. If so, the investigating commander provides for the FAA to take part in the military investigation as prescribed by AFR 127-11.

(3) Cooperation between NTSB and FAA personnel and the Air Force in these investigations is essential. If the military investigation referred to in (2) above concludes FAA personnel or facilities were causal in the mishap, comply with AFR 127-11. Notification through proper channels will make sure corrective action can be taken by the FAA.

3-5. INVESTIGATIVE EVIDENCE:

A. IMPOUNDMENT OF AIR FORCE MATERIAL. Mishap investigations have inherent priorities over other activities and investigations connected to the mishap. Among these is the right of investigators to impound Air Force property involved in the mishap. Investigators should understand these priorities, but it is also important to know their limitations. For example, rescue of personnel and saving of hazardous materials always takes precedence, even at the risk of losing evidence. Or, an installation commander may elect to remove wreckage which is interfering with important mission activities or which is a hazard at the mishap scene. Apart from such limitations, safety investigators may impound Air Force material and documents which are relevant to the investigation. Investigators may also get copies of recorded communications from communications activities and transcripts of relevant FAA recordings.

B. HUMAN FACTORS INVESTIGATION. Evidence as to the physical and mental conditions of persons involved in mishaps is also important. Additionally, medical opinion as to the capability of these individuals to return to their duties is often required.

(1) Chapter 11 has instructions for the medical member of investigating boards on the kinds of physiological evidence required.

(2) When human remains are not located on federal property, they may or may not be under the jurisdiction of civil authorities. Investigators should consult with the mortuary officer of the supporting base to determine whether or not civil authorities have jurisdiction. The mortuary officer will more than likely have a memorandum of understanding with civil authorities according to AFR 143-1.

C. PHOTOGRAPHING EVIDENCE. Photography can be helpful in preserving otherwise perishable evidence. Photographs are made mainly to assist the investigation; their use as exhibits in the report is also a consideration. Liberal use of photography in all phases of the investigation is recommended. However, the pictures selected for later inclusion in the report should be limited.

D. WITNESSES. Physical and documentary evidence are the most credible forms of evidence. However, the accounts of witnesses often provide important (and sometimes the only) leads as to the causes. Witnesses include those involved in the mishap, those who only saw it, and those whose training and experience qualify them as experts. The appearance of witnesses before an investigator or board is governed by the following:

(1) Witnesses may not be administered truth serums, hypnotic techniques, drugs, or polygraph tests. If a statement is provided by a witness under medication, a notation so indicating is added to the statement.

(2) Witnesses do not testify under oath and are not sworn.

(3) Witnesses in aircraft, missile, space, or nuclear safety investigations are advised before testifying of the purpose of the investigation. The sole purpose of the investigation is to determine all factors relating to the mishap in order to preclude recurrence. The basis for this advice is the Air Force claim of privilege for the statements given in confidence by these witnesses (paragraph 1-9). It is a guarantee of confidentiality and is given to encourage frank and open communications.

(4) Witnesses in other safety investigations are advised that the main purpose of the investigation is to determine all factors relating to the mishap in order to preclude recurrence. No guarantee of confidentiality is given, because general-use mishap reports are not protected by the claim of privilege. Moreover, Air Force witnesses are treated according to (5) below.

(5) The purpose of safety investigations reports prescribed in this regulation is mishap prevention. However, no protection beyond this assertion can be offered to Air Force personnel involved in investigations producing general-use reports. Suspect witnesses should be advised of their rights under the 5th Amendment to the Constitution (civilian), or Article 31, UCMJ (military). Providing AF Form 1168, Statement of Suspect, for signature of the suspect witness fulfills this purpose. A witness may be considered suspect when evidence indicates he or she may

have contributed to the mishap. In questionable cases, ask the staff judge advocate.

(6) Sometimes investigations are initiated under the limited use provisions of paragraphs 1-9 and (3) above and are then recategorized as general use investigations. When this occurs, all statements obtained under a promise of confidentiality must be considered invalid and shall not be used for any purpose. Investigators must then contact all witnesses, inform them of the procedural change and either obtain a new statement or give them the opportunity to affirm their previous statement.

E. DISPOSITION OF EVIDENCE. Investigators keep materials used as evidence only as long as needed to complete the investigation and write the report.

(1) Keep Air Force equipment which is damaged beyond repair until all investigators indicate it is no longer needed. Safety investigators make disposition in one of these ways:

(a) Forward exhibits supporting MDRs, TDR requests, and laboratory evaluations according to paragraph 3-7. Dispose of TDR exhibits according to AFM 67-1, volume I.

(b) If there is an AFR 110-14 investigation, wreckage should be turned over to the accident investigator(s) through the investigating commander. Make sure the responsible person in the accident investigation knows the wreckage is available and acknowledges custodial responsibility. Also, tell the host commander of the transfer. If the accident investigator(s) says the wreckage is not required in that investigation, proceed as in (c) below.

(c) Release wreckage not needed in support of depot, laboratory, or accident investigations to the base commander for salvage. (See paragraph 3-6.) Dispose of lost, damaged, or destroyed property according to AFM 67-1, volume I.

(2) Return Air Force equipment which is not damaged beyond repair to the possessing organization as soon as possible. This is subject to the prior needs of an accident investigation. Try to expedite the investigation of repairable equipment so it may be returned to service without excessive delay.

(3) Provide all nonprivileged evidence to the AFR 110-14 Investigation Board.

(a) Original documentation (paragraph 1-9f) will be given to the AFR 110-14 investigator(s): Readable copies will do for the Safety Report.

(b) If there is no AFR 110-14 investigation and HQ USAF/JA has not notified the board of special needs coordinate with HQ USAF/JACC, through the Staff Judge Advocate, to ascertain whether any discovery requests pertaining to evidence in the hands of the safety board have been directed to the Air Force. If there is no such requests

original documents and records used by the Safety Board should be returned to their proper custodian for use/destruction per Air Force Directives after reproducing enough copies for the Safety Report.

(4) Privileged documentary evidence must be carefully controlled by the Safety Investigation Board. Privileged documentary evidence includes witness statements and testimony. Inputs from contractor representatives (acquired under promise of confidentiality), drafts indicating the board's analysis and conclusions, privileged photographs/films/videotapes, cockpit voice recordings/transcripts of intra cockpit conversations, diagrams, and other exhibits. Documents generated by the Safety Board must be included in Part II of the report or destroyed along with any excess privileged materials not needed for the formal report. Internal board working papers must also be destroyed. If there is a need to retain any document for briefing purposes, all such documents should be placed in a folder, marked as privileged safety board investigation materials, and maintained under seal until no longer needed and then destroyed.

(5) Return usable personal equipment or protective gear to surviving possessors of record or to the issuing authority. This is subject to the prior needs of an accident investigation.

3-6. PROCEDURES FOR RECOVERY AND DISPOSITION OF WRECKAGE. Except to do essential rescue operations or prevent interference to air operations or vital civil functions, do not destroy or remove wreckage without the agreement of the investigator(s). Investigators should advise the appropriate authorities when all evidence required to determine cause factors has been obtained (paragraph 3-5).

A. ASSISTANCE IN WRECKAGE RECOVERY. The investigators may request, through the investigating commander, wreckage recovery assistance from the nearest military base. For information on availability of required equipment, the investigating commander may contact the cognizant Navy or Coast Guard district commandant, Air Force headquarters, or Army area headquarters, as appropriate.

B. REMOVAL OF WRECKAGE FROM MISHAP SCENE. When the investigators have no further need for wreckage at the scene, the investigating commander makes sure that it is removed. The scene must be policed for evidence of human remains and parts of aircraft, explosives, missiles, vehicles, weapons and carbon fiber material. The investigating commander retains the wreckage if additional investigation, testing or study of the wreckage is needed.

(1) Potential Litigation. If litigation may occur as a result of a mishap (coordinate with HQ USAF/JACC), the wreckage must not be disposed of without permission of The Judge Advocate General, HQ USAF.

(2) Wreckage in Populated Areas. If wreckage falls in populated areas, prompt removal may be the best course of action. The investigating commander or the nearest Air Force base commander makes this de-

termination and takes proper action. In questionable cases, consult with the Directorate of Aerospace Safety.

(3) Submerged Wreckage. Sometimes recovery or salvage of submerged wreckage is required but is beyond the capabilities of the base concerned. In this case, the investigating commander may request help from the US Navy as follows:

(a) Commander, Naval Sea Systems Command, Attn: Supervisor of Salvage, Wash DC 20362, telephone number: AUTOVON 227-7386, 7403, or 7413. For commercial calls, dial Area Code 202 and use the prefix 697 (692-5727 nights and holidays). Telephone requests require a followup message per instructions given by the supervisor of salvage. If the initial request is made by message, include the following:

1. Exact location of wreckage, if known.
2. Whether wreckage is marked by buoy.
3. Type of ordnance on board aircraft, if any.
4. Whether classified material is on board.
5. Funding information. Defense Acquisition Regulation (DAR)E-103 provides for the Navy to advance funds to private companies for immediate financing for salvage operations. (Also see 10 U.S.C. 7364.)

6. Air Force personnel to contact (message address and telephone numbers).

(b) Include as information addressees:

1. Chief of Naval Operations, Wash DC
2. Commandant, applicable naval district. For European and Middle East area: CINCUSNAVEUR.
3. The cognizant fleet commander, if outside the CONUS. (For Pacific: "CINCPACFLT. Far East: Commander Seventh Fleet." For Atlantic: "CINCLANTFLT Norfolk VA.")

(4) Nuclear, Explosives, or Radioactive Wreckage. The investigating commander is responsible for the cleanup, rehabilitation, and security of the area until relieved by higher authority or the organization having physical possession of the component at the time of mishap. (See AFR 355-1.) Additional assistance may be requested from:

(a) 2701st EOD Squadron, Hill AFB UT 84406 (telephone number: (801) 77-5501; AUTOVON 458-5501), for Explosives Ordnance Disposal (EOD), monitoring, and decontaminating assistance.

(b) AF Operations Center, Wash DC 20330 (telephone: (202) 697-6103), when additional technical advice or medical assistance is required.

(c) Joint Nuclear Accident Coordinating Center (JNACC), Kirtland AFB NM 87117 (telephone: (505) 844-8279 or AUTOVON 244-8279). JNACC catalogs more than 500 response teams worldwide, including complete data on location and capability.

C. OBLITERATING OR MARKING ABANDONED AIRCRAFT, SPACE OR MISSILE WRECKAGE. All wreckage which cannot be removed from the mishap scene should be obliterated or marked. Do this according to one of these procedures, listed in order of preference:

(1) Regular Wreckage Disposal. Dismantle the wreckage as much as possible, and bury the residue when terrain and accessibility permit.

(2) Unusual Wreckage Disposal. When wreckage burial is impractical, use explosive demolition to scatter parts in small pieces over the widest area possible. Explosive demolition must be done by qualified EOD personnel. Use established procedures and coordinate with the responsible civil authorities. Care must be taken to prevent forest fires or damage to public or private property.

(3) Undisposable Wreckage. Mark all wreckage that cannot be disposed of with a large and conspicuous yellow painted cross. Give the exact location of the wreckage by coordinates, together with photographs showing configuration of wreckage, to the Air Rescue Center(s).

(4) Inaccessible Wreckage. Sometimes wreckage is so inaccessible that the methods above cannot be used. In such a case, carefully plot and photograph it from as low an altitude as practicable. Furnish:

(a) Air search activities the exact location and a photograph showing the configuration of the wreckage.

(b) The Air Rescue Center(s) the exact location of the wreckage by coordinates and photographs showing configuration or wreckage.

NOTE: Abandonment of wreckage as explained above does not mean legal abandonment of title. Action to give up title is governed by AFM 67-1.

3-7. INVESTIGATION OF EQUIPMENT FAILURE, MALFUNCTION, OR INADEQUATE DESIGN:

A. METHODS. Three procedures are generally available for determining the reason for the failure or malfunction:

(1) Local Investigation. If the manner of the failure or malfunction is readily apparent, local investigators may be able to find the cause.

(2) Technical Assistance. Additional technical assistance beyond the resources of the investigating commander may be required. If technical specialists are needed at the site of the investigation, make a request according to paragraph 3-8.

(3) Priority Teardown Deficiency Report (TDR). TDRs are part of the Air Force Product Improvement Program and the Materiel Deficiency Reporting System. These are described in AFR 66-30 and TO 00-35D-54. Request priority TDRs through the system manager (SM), item manager (IM), or program manager (PM), by submitting Category I materiel deficiency reports (MDR) or service reports (SR). If a TDR is requested, no disassembly of the exhibit should be attempted in the field.

¹ B. USING THE AIR FORCE MATERIEL DEFICIENCY REPORTING SYSTEM. If a materiel deficiency is known or suspected to be a cause of an Air Force mishap, submit a Category I MDR or SR on the item. A Category I MDR or SR is also used when failure is not suspected but a TDR is needed.

(1) Field Investigators' Responsibilities. The safety investigating board or officer makes sure that MDRs or SRs are sent for materiel deficiencies known or suspected to be causal. They make sure that exhibits are kept and shipped as instructed and that notification of shipment is sent. They insure that the mishap control number is referenced in the MDR/SR subject line. Finally, they take followup action to make sure exhibits were received and TDRs are in progress.

(a) A mishap Category I MDR or SR may be prepared and sent by the maintenance member of an investigation board. Include final disposition instructions for the exhibit, if possible.

(b) Handle exhibits to be shipped for TDR according to TO 00-35D-54. TO 00-85-20 tells how to mark engines for TDR.

(c) When an engine/equipment is sent for TDR due to personnel ingestion, the field investigator in conjunction with local mortuary affairs and the chief of maintenance, will make every effort to remove human remains from the exhibit prior to shipment. They will also ensure the shipping documents are properly marked according to TO 00-35D-54, and attach a prominent marking indicating that engine/equipment was involved in a personnel ingestion mishap.

(2) Combined Class C Mishap and Category 1 Reports (or Dull Sword). A provision of TO 00-35D-54 allows for combining the Class C mishap report and Category 1 MDR or SR. This may be done when the only cause(s) of the mishap was materiel failure or malfunction or design deficiency. Do not submit combined reports when there is personnel involvement or when reportable injuries are sustained in the mishap. These reports are not privileged or designated as limited-use reports, even though their subjects may be flight, missile, or nuclear mishaps. When combined Class C ground mishap message reports are submitted, do not submit an AF Form 711a, Ground Mishap Report. Do not mark combined reports For Official Use Only. Format for the combined report is spelled out in TO 00-35D-54, Section III.

(3) Investigating Major Commander's Responsibility. If the final mishap report was sent before receipt of all TDRs, the investigating MAJCOM should take followup action. If final exhibit disposition instructions were not included in the original request for TDR, provide them to the SM, IM, or PM.

(4) AFLC and AFSC Responsibilities. AFLC and AFSC respond to requests for Priority TDRs as required by AFR 66-30, TO 00-35D-54, and command directives. Exhibits sent for Priority TDR are not disposed of without written approval of the investigating commander. A prelimi-

nary report of Priority TDR findings is furnished to the field investigator(s) as soon as possible to assist in compiling the final mishap report. Handling instructions for the final TDR are as stated in AFLC or AFSC publications. TDRs related to Air Force mishaps must refer to the mishap control number (paragraph 4-7). Distribution of TDRs is as follows:

(a) One copy to the Director of Aerospace Safety or Nuclear Surety. (Attach all supporting documents, such as metallurgical analysis, photographs, test reports, and so forth to this copy.) For Class A and B (or nuclear) mishaps, provide the documents as soon as they are available. If the TDR and backup data were not previously sent, they may be attached to the Air Logistics Center (ALC) or program office indorsement (paragraph 13-6). For HAP mishaps, forward the TDR to the Director of Aerospace Safety upon completion. Identify the mishap by using the mishap control number assigned to the mishap message report and repeating times 1 through 4 of the message report.

(b) One copy to the organization that requested the TDR. If the mishap investigation board has forwarded its final report, send this copy to the investigating MAJCOM.

(c) One copy to the MAJCOM have jurisdiction over the organization possessing the aircraft. An additional copy should be sent to NGB for Air National Guard mishaps and HQ AFRES for Air Force Reserve mishaps.

(d) One copy to ASD/SE, Wright-Patterson AFB OH 45433, if the mishap involved an aircraft or a nonspace vehicle. (For missiles other than ballistic missiles, forward one copy to ASD if required by table 12-2, line 7.)

(e) One copy to Space Division/SE, PO Box 92960, Worldway Postal Center, Los Angeles, CA 90009, if the mishap involved a system or component used by a ballistic missile or space launch vehicle.

(f) One copy to the cognizant AFSC System Program Office or AFLC System Manager, whichever has engineering authority for the item in question.

3-8. USING EXPERT TECHNICAL ASSISTANCE FROM RESOURCES OTHER THAN THOSE OF THE INVESTIGATING COMMAND. A variety of technical specialists are available to assist field investigators. The paragraphs which follow tell how to get and use expert technical assistance during field investigations:

A. DETERMINING THE NEED FOR TECHNICAL ASSISTANCE. The field investigation needs to consider all factors influencing the mishap and survival sequences. In most cases, there is early evidence that eliminates many possible factors. Those factors so eliminated should not be pursued, even though all the details may not be known. Pursuing them would not help the investigation toward its goal and would result in wasteful expenditures. Those factors which remain after the initial evaluation, however, are investigated until their roles are either confirmed or eliminated.

When the investigation of these factors is beyond the scope of the appointed investigators, technical assistance should be requested. At this point, discontinue further processing of the evidence (such as disassembling components) pending arrival of the requested specialist. If items are to be sent to a laboratory in lieu of on-site inspection, handle them only as instructed by the agency which will do the analysis. At times the services of the FBI, FAA or the NTSB might be requested for voice tape repair, enhancement, or analysis. Make sure the Air Force maintains custody of all materials. After analysis all materials and analyses must be accounted for by the safety mishap investigation board.

B. REQUESTING AND USING TECHNICAL ASSISTANCE:

(1) **Technical Assistance.** Technical assistance from resources other than those of the investigating command will be obtained through the AFISC mishap technical assistance unit. In response to valid requests for assistance, AFISC will determine the best available source for the assistance and arrange for it to be furnished. Sources include HQ USAF/LEEE, AFLC, AFSC, AFIP, AFESC, OSI, NTSV, FAA, other services, and industry. **EXCEPTION:** Overseas commands may use technical assistance already available within their own resources in the overseas area without coordination with AFISC. Assistance furnished from CONUS sources will be coordinated with AFISC.

(2) **Procedures.** Contact AFISC technical assistance unit either directly or through the investigating command safety staff. If contact is direct, response will be coordinated with the MAJCOM safety staff. Message address: HQ AFISC Norton AFB CA/SEP AUTOVON: Normal duty hours (0730-1630 PST/PDT)-876-2581; AUTOVON: Other times 876-1110. Ask for 63 MAW Command Post.

(3) **Technical Specialists.** When technical specialists support a safety investigation they are under the control authority of the board president or investigating officer. This applies to DOD military and civilian personnel as well as to contractor or manufacturer representatives. When technical specialists complete their investigations they are expected to report the results of their work to the safety investigators. These reports may be written or oral. Reports submitted by DOD personnel are placed in Part I of the formal safety report. Reports submitted by contractor personnel assigned (by contract) to an ALC/DOD agency (but not employed by a contractor who designed, manufactured, or maintained the equipment or weapons system) will also be included in Part I of the formal safety report. In unique instances wherein an ALC or an assigned contractor representative is required to provide the safety board an opinion relating to the cause of a mishap, that information will be delivered separately to the safety board and included in Part II of the safety report. In all cases, the Part I reports submitted by ALC or assigned contractor personnel will conform to the format at figure 3-1 to this regulation. Review these reports to ensure they do not contain refer-

ences to privileged sources such as pilot, crewmember or operator testimony, or materials provided by contractors under a promise of confidentiality. Reports submitted by representatives of contractors who design, manufacture, or maintain equipment involved in a mishap are placed in Part II of the formal safety report.

3-9. SABOTAGE AND OTHER AFOSI INTERESTS:

a. If sabotage is suspected, a safety investigation is initiated under this regulation. It is done at the same time as the sabotage investigation required by AFR 205-57. The safety investigation continues until completed, or until sabotage is confirmed as the cause of the mishap. If sabotage is established as the cause:

- (1) Discontinue the safety investigation.

- (2) Give all (except witness statements and contractor inputs) material held by the safety investigator(s) to the agency conducting the sabotage investigation. Also give them the names of all witnesses interviewed. The governing regulation then becomes AFR 205-57. Notify messages addressees of change in investigative responsibility.

b. Who to Notify if Sabotage is Suspected. If, during a safety investigation, evidence is discovered which suggests sabotage, immediately contact the nearest AFOSI office. They will give instructions on preserving and protecting the evidence. If requested, turn over such evidence to the AFOSI.

3-10. INVESTIGATION/ANALYSIS. The investigator(s) document the investigation and analyze data collected from witness statements, testimony, technical evaluations, and other documentary information. The investigator(s) should describe each area which was investigated and discuss its significance. Evidence which has little or no significance may be discussed briefly. Areas which are very important in explaining the mishap warrant extensive analysis. Investigator(s) may choose to summarize conclusions at the end of this section before going on to the findings.

NOTE: MISHAP FACTORS are an attempt to explain why causes (such as pilot factor, supervision, equipment failure, etc.) occurred. The factors listed below are not mutually exclusive, but are often interrelated and in some cases influence one another. Most mishaps involve multiple mishap factors. To make sure the investigation considers all important areas, use the list below. Omit those that do not apply, and add others as necessary to analyze the mishap.

A. HUMAN FACTORS. Human factors in this context refers to any human attributes, characteristics or limitations which in any way affects the man-machine-mission-medium-management relationship. For convenience, the "man" may be analyzed in categories such as background, motivation, selection, training, or characteristics, (physical, physiological, psychological, perceptual, psychosocial, pathological and pharmacological). While the implications of these may be discussed separately, for analytical purposes, it should be recognized that the human is an integrated

whole and that his various characteristics interrelate and overlap. The "machine" aspects may be evaluated in terms of conception, design, fabrication, testing, modification, maintenance, handling and performance qualities, (configuration, symmetry, weight, center of gravity), cues provided the pilot, cockpit layout, displays, lighting and the potential for distracting/disorienting/misorienting/incapacitating the pilot. "Mission" involves the operational aspects: what the pilot prepared, briefed, intended and attempted to do with the machine. "Medium" involves the environmental situation in which he attempted to perform the mission. "Management" considers the supervisory aspects including ensuring proper training pertinent to the mission, matching the man to the mission and matching the machine to the mission.

(1) General:

(a) Background. Background may be considered a factor when a crewmembers' upbringing failed to equip him with the fundamental attributes required to function effectively in a highly technological society. Upbringing entails morality, character, independence, ability to function under stress, sense of responsibility, dependability, self-discipline, etc., as well as basic technological and communication skills.

(b) Motivation. Consider overall motivation to fly, to accomplish this particular mission or this particular maneuver. Motivation may be a factor of deficiency or of excess. Under motivation may attend a personal aversion to flying, to the aircraft, or to the mission, or it may attend a perceived or actual reduction in mission complexity or demand, resulting in less preparation or attention than necessary. Over-motivation, on the other hand, may be considered when a pilot is predisposed to accomplish a given mission element successfully regardless of the situation. Mission success is afforded a higher priority than caution, judgment, or known restrictions. Past failures often create this higher than desirable will to succeed, especially if the failures resulted in criticism. Over-motivation has also resulted in criticism. Over-motivation has also resulted from overemphasis on competition, with the attendant underemphasis on training.

(c) Selection. Selection may be considered a problem whenever a pilot appears mismatched to flying or to flying the mishap type of aircraft. Include flying history and basis for which selected or screened to fly the mishap aircraft.

(d) Training. Training deficiencies are considered to be a factor when a pilot/person was not trained, or was inappropriately trained to perform the mission element being attempted. Consider the emphasis of training[:] was precision/perfection (i.e., heads-in) emphasized over situation awareness? Did the composite instrument cross-check emphasize progressive incorporation of the runway environment in IMC approaches to avoid the common tendency to go visual too soon? Was there a systematic approach to low-level awareness training? What role did simulators

play, if any? Consider how the training was conducted, whether the pilot received it and whether he or she understood it. Was it provided by a credible source? Was anyone present who may have intimidated the pilot from asking questions of clarification, such as the ops officer or squadron commander? Were good life saving points submerged in a plethora of worthless information?

(2) Characteristics:

(a) Physical. Consider factors such as anthropometry (fit, reach, see, activate), strength, stamina, endurance, height, weight, and build.

(b) Physiological. Consider factors which incapacitate, confuse, disorient, distract or dull: hypoxia, hyperventilation, acceleration-induced compromise, spatial/roll axis disorientation/misorientation, decompression sickness (evolved/trapped gas), hangover, menstruation.

(c) Fatigue. Fatigue comes in several forms: short term or transient/acute; cumulative; circadian rhythm phase point (time zone) changes; phase shift (day-night work changes); or chronic. Consider impact of long workdays, scheduling problems and sleeping difficulties. Fatigue may be of physical, physiological or psychological origin. Regardless of source, it produces errors of omission or commission, anomalies of attention, and results in increased time to perform a task. Despite fulfillment of crew-rest requirements, fatigue may be present. Conversely, violation of crew-rest does not automatically indicate fatigue. Fatigue is often highly specific to the task being undertaken, some tasks can be performed much longer than others.

(d) Psychological. Psychological characteristics or limitations refers to those which are associated with the function of the human system as a skilled or thinking entity as well as behavior under mental or emotion stress. It involves such characteristics as basic aptitude and cognitive abilities, judgment, maturity, awareness, and insight.

1. Basic aptitude and cognitive abilities includes such factors as learning ability, intelligence, thinking ahead, switching ability, and ability to handle multiple simultaneous inputs.

a. Learning Ability. Failure to absorb, acquire or retain information necessary to perform the mission element. This implies no deficiency in the training program per se.

b. Forgetting. Forgetting is the decay process by which information once available for use has been lost. This loss may or may not be permanent as indicated in the process of habit interference and may reassert itself at inopportune moments.

c. Habit Interference. There are several types:

(1) Interruption. Interruption at some point of a routine results in skipping over one or more steps of the routine without registering at the conscious level. (The pilot thinks he or she has lowered the gear but hasn't.)

(2) Continuation. Once initiated, a routine may continue

to completion without registering at the conscious level. The pilot intends to leave the gear down after a touch and go; but habit pattern continuation, he/she unconsciously raises them. Thinking they are still down, he or she does not bother to recheck and lands gear up.

(3) Substitution or Confusion. Having developed routines appropriate to one aircraft, the pilot inappropriately substitutes or confuses those routines in a different aircraft. The substituted pattern may have been developed at any time relative to that desired. It occurs in multiple aircraft currencies as well as in similar aircraft with different cockpit layouts in which the pilot may be unable to locate a certain instrument.

(4) Retroactive Inhibition. An extreme form of substitution in which a supposedly longforgotten habit pattern is inserted (most commonly during stress). An example is reaching in the wrong place for the ejection handle.

d. Knowledge is the fund of information and skills which the individual has accumulated. In accidents, lack of knowledge is a frequent consideration. This may be due to failure to have been informed; failure to have adequately learned; failure to be able to apply, or failure to use because of the forgetting process.

2. Judgment. Judgment includes common sense, a logical set of priorities, ability to tell what's important, ability to profit from mistakes (either own or other), appropriate planning both for routines and contingencies, and perspective. Perspective involves appropriate objectives, the "big picture", and avoidance of "mindset". Judgment also involves the avoidance of doing "dumb things" that have an unwarranted potential for damaging oneself, one's aircraft, or for that matter one's career. Judgment also presupposes a normal survival instinct.

3. Personality. Personality involves the complex of characteristics that distinguishes a particular individual or characterizes the individual in his relationships with others. It includes such factors as confidence, aggressiveness, and temperament.

a. Ego. Ego involves self-esteem, role concept (who the crewmember thinks he or she is), pride, response to peer pressure; tendency to press, prove self, show-off; fear of failure, stigma, or of looking bad. It also involves the importance of looking good; a "macho" image, a reputation to acquire or uphold, and self-reliance.

b. Relations with other involves factors such as maturity, the degree of dominance, competitiveness, extroversion, leadership, communication skills, concern for others, sense of humor and gregariousness.

4. Awareness. Awareness describes one's ability to acquire and maintain situation awareness. It demands attention and implies a grasp of the overall situation, an ability to stay on top of things, or an ability to control the situation.

NOTE: Attention involves concentration on the appropriate things at the

right time. Failure to appropriate attention properly is an exceptionally important pathway in mishaps. For convenience, anomalies of attention are subdivided as follows:

a. **Distraction:** Considered wherever an unplanned event draws the victim's attention away from the task at hand. Distractions commonly cause a reflex response.

b. **Channelized Attention:** Concentration on the task at hand to the exclusion of tasks or cues of a higher priority.

c. **Inattention:** Failure to attend to flight related tasks for non-flight related reasons. "Day-dreaming" and "lolly-gagging" on the flight deck are examples.

5. **Complacency.** Unwarranted, uncritical satisfaction with one's situation, often occurring when the upcoming mission element is perceived as relatively undemanding; a relaxation of vigilance or attentiveness that is inappropriate to the situation. It commonly accompanies over-familiarity with the environment or flight regime such that the victim becomes "too comfortable". It is also seen as excessive uncritical faith in the abilities and capabilities of another individual to whom responsibility is entrusted.

6. **Task Management.** The Overall ability to effectively accomplish the task at hand. It involves:

a. **Switching ability (mental flexibility):** the ability to switch tasks efficiently and effectively without losing track; the ability to handle multiple simultaneous inputs.

b. **Prioritization:** the ability to tell what's important; implies knowledge and judgment.

7. **Task-Saturation:** inability to devote the attention required to all the tasks being attempted or factors encountered. A common problem in high threat environment, deteriorating visibility, or multiple emergencies.

8. **Decisionmaking.** Decisionmaking is the ability to select a course of action based upon whatever information (synthesizing background, knowledge and experience) was available at the time. The decision may be incorrect though logical, illogical, impulsive, premature, ill-considered, excessively delayed, etc.

9. **Insight.** Insight involves awareness of one's limitations, the source of one's personal psychic reward, and of what makes oneself tick.

10. **Affective Behavior.** Affective behavior refers to emotions, moods, and emotional states.

11. **Psychomotor Complement.** Psychomotor complement involves coordination, inadvertent inputs, reaching for one switch and hitting another, "hands", over/under controlling and controlling out of phase (e.g., pilot induced oscillation).

(e) **Perceptual.** Consider the role of the sense in misinterpreting

available cues, or the role of cues or the lack of cues in misleading or confusing the crewmember.

1. Visual:
 - a. Failure to see.
 - b. Misinterpretation of what is seen (Illusions).
 - c. Misjudgments-height, distance, closure rates.
 - d. Distracting inputs.
 - e. Disorienting inputs (Vection illusion).
 - f. Confusing inputs.
 - g. Roll axis disorientation.
2. Auditory - Lack of speed cues.
3. Balance:
 - a. Vertigo
 - b. Acceleration Illusions.
4. Kinesthetic - does the aircraft talk to the pilot?

(f) Psychosocial. Psychosocial considerations involve how the individual relates to others or groups.

1. On-duty relationships include the supervisory element, peers, the unit, as well as subordinates. Other crewmembers or element-mates influence the individual's actions as well, e.g., the flight lead.

2. Off-duty relationships include family, friends, social groups, or acquaintances that may affect his or her behavior.

(g) Discipline. Discipline involves self-control, punctuality, planning, preparation, thoroughness, mental rehearsal, compliance with directives and maintaining an appropriate level of vigilance. Discipline is strongly affected by the unit supervisory element; the example set by others in the unit (the expected behavior). Self-discipline implies awareness of personal limitations and staying within these limits.

(h) Pathological. Pathological refers to disease or illness, whether physical, mental or emotional, affecting or influencing behavior in the mishap.

(i) Pharmacological. Any substance potentially affecting perception, balance, alertness, judgment, thinking ability or coordination; any substance distracting or irritating the pilot may be considered here, such as smoke and fumes.

(j) Stress. Stress is a state of disequilibrium which serves as a motivating factor with the goal a reduction of stress itself. Too little stress results in complacency with an increased probability of errors. Optimum stress results in maximum productivity. Too much stress causes a breakdown in the system with resultant inefficiency. Stress varies from individual to individual, may be temporary or continuing process and may be generated by a great variety of pressure in the physical, physiological or psychological categories.

1. On-duty Stressors: Real/perceived (job promotion, flying

upgrade, multiple DOCs, additional duties, alerts, exercises, TDYs scheduling problems); interpersonal relations in unit/flight; significance of the flight; desire to impress leading to pressing; unit stress.

2. Off-duty Stressors: Family/social; financial; political; religious; recent major life changes.

B. OPERATIONS FACTORS:

(1) Preparation:

(a) Mission Planning.

(b) Briefings. When a mission element that should have been briefed was not or was inadequately briefed, briefing is considered a factor. Normal tasks such as lowering the gear for landing are not considered mandatory briefing items, and briefings are not considered inadequate when such tasks are not covered.

(c) Clearance Package.

(d) Weather.

(e) Preflight.

(f) Required Publications (Directives):

1. Inadequate Tech Data. Mishaps involving tech data which are clearly deficient are assigned this factor. A lack of description of generally known procedures (such as buttoning up panels when through or using left rudder if the aircraft drifts right on landing) are not considered inadequacies.

2. Inadequate Procedures. When the procedures for accomplishing a task are clearly inadequate, this factor is assigned. For example, procedures for determining the adequacy of a strafe pit were lacking, and the resulting increased ricochet density caused a destroyed aircraft due to 20 mm engine FOD.

3. Inadequate Directives.

4. Command and Control (Supervision). Command and control is considered a factor when supervision MAJCOM is inadequate or when procedures over which the has control are inadequate, nonexistent, or contradictory. Command and control deficiencies are normally characterized by inadequate supervision at unit or wing level, or inadequate mission planning or scheduling. Failure to monitor the conduct of operations or failure to provide close in-flight supervision where training or proficiency are suspect are also indicators of command and control deficiencies.

5. Personal Equipment.

(2) Mission Factors:

(a) Skill/Technique. Deficiencies here are considered factors when a pilot lacks the required motor skills or uses an improper technique (hamfisting) to perform the task attempted.

(b) Event Proficiency. Lack of event proficiency is considered a factor when the pilot attempting the mission element has:

1. Never done it before.
2. Done it before but not recently.
3. Done it recently for the first time. "Proficiency" and "currency" as defined by MAJCOM criteria are not necessarily synonymous. The pilot's demonstrated ability to perform the task is the governing factor.

(c) Flying Proficiency. As opposed to event proficiency, this factor is assigned if limited recent flying time or sorties were considered to be a factor in the mishap.

(d) Crew Rest and Crew Duty Day.

(e) Mission:

1. Pressing. A pilot who continues a maneuver or task to the point that known parameters are exceeded is considered to be "pressing." The decision to continue rather than abort is normally spontaneous rather than premeditated and is generally made in the interest of mission accomplishment. The pilot who presses "takes a chance" and places himself or herself in a position where increased stress often leads to task saturation or channelized attention.

2. Overcommitment. When a pilot is put in a situation where success requires that he or she exceed his or her capabilities, he or she is considered to be "overcommitted." Overcommitment normally involves supervisors, schedulers, or flight leaders, but it can result from a lack of knowledge of his or her own limitations compared to mission demands or, in some cases, from a combination of circumstances.

3. Urgent Mission. Urgent mission is considered a factor if a pilot perceives that the overall mission is more important than a normal training mission. This factor is often associated with actual search and rescue and cargo resupply missions. The perception of importance often results in overmotivation, pressing, or breakdowns in discipline.

4. Mission Stress. If the conditions surrounding a mission generate excessive stress, this is considered a factor. These conditions are often present during deployments, check rides, exercises, and other high visibility missions.

5. Discipline Breakdown. A discipline breakdown is considered a factor when either of two conditions exist. Lack of discipline is evident when pilots wilfully violate known directives or restrictions. Discipline is also considered a factor when people knowingly bend, stretch, or ignore restrictions because they perceive tacit approval by unit supervisors for the sake of mission accomplishment. However admirable their motives might be and however slightly the limits might be exceeded, failure to adhere to known restrictions is considered a breakdown in discipline.

(f) Flight (Environment).

(g) Violations.

(3) External Factors:

- (a) Airfield facilities.
- (b) Airfield lighting.
- (c) Communications and navigational Aids.
- (d) Medical.
- (e) Manning (unit).
- (f) Equipment Malfunction in flight. This factor is used to isolate the occasions when an aircraft failure or malfunction, rather than a mission element, caused the pilot to be distracted or otherwise fail to accomplish the task at hand.

(4) Post-Mishap Factors:

- (a) Ejection.
- (b) Survival.
- (c) Rescue.
- (d) Crash response.
- (e) Reconstruction.

C. UNIT MAINTENANCE FACTORS:

(1) Maintenance Personnel Qualifications:

(a) Inadequate Training. When a person was not trained or was inadequately trained to perform the task(s) or procedures(s) being attempted. Training deficiencies should be identified in two categories: (1) resident-tech school or FTD (2) OJT (CAMT, AMQP, etc.).

(b) Inexperienced Worker. If the person performing task(s) related to the mishap does not have adequate background or experience on the weapon system or subsystem. Consider the individual's amount of time on the mishap weapon system when making this determination (a) less than 1 year (b) 1 to 3 years (c) more than 3 years. For example, a specialist with less than 1 year experience or someone recently crossflowed from a different weapon system would not be experienced. Generally, less than 2 years on a weapon system is not considered experienced.

(c) Inadequate Learning Ability. When a person was exposed to the information needed to perform a task but did not absorb it. This implies no deficiency in training but rather one of the individual's learning ability.

(d) Lack of Task Proficiency. If limited recent performance of a particular job is considered to be a factor. This factor occurs on jobs that are not done frequently enough to stay proficient.

(2) Miscellaneous Human Factors:

(a) Excessive Personal (Mental) Stress. If a person has unusual or severe personal problems such as family problems, financial problems, etc., which cause worry or concern. It may be difficult to assess the extent to which these problems might influence performance.

(b) Physical Fatigue. If a person is truly fatigued, this may result from overtime (consistent 12 hour shifts, frequent extended 6 to 7 day

work weeks, lack of rest, part-time jobs, TDY, frequent shift changes, etc.).

(c) **Distraction.** If a person's attention is drawn away from the task at hand by an outside factor. This normally occurs during shift changes, being pulled off the job for other priority, emergency, horseplay, etc.

(d) **Channelized Attention.** When a person concentrates on the task at hand to the point that other problems or hazards are not noticed. This tends to occur while performing tasks that require extreme concentration or have an established habit pattern such as engine start, launches, end of runway checks, etc.

(e) **Task Saturation.** When a person cannot give the required attention to all of the multiple tasks being attempted with the factors/conditions being encountered. This usually occurs during pressure situations such as the "red ball" repair to prevent a ground abort. It also can occur when a person is not well trained or attempts numerous tasks under pressure.

(f) **Complacency.** A factor when the awareness of actual hazards is relaxed due to familiarity with the equipment or environment. This often occurs after numerous repetitions of a task to the point that the worker becomes "excessively comfortable". It may also be induced by overconfidence in the abilities of other workers. This can happen to either experienced or inexperienced workers.

(g) **Habit Pattern Deviation.** When an individual does not follow normal habit patterns. The most common type of error involves forgetting to do part or a routine task. It also involves a reversion to habits learned previously and no longer appropriate.

(h) **Overconfidence.** When personnel demonstrate excessive confidence in their ability to perform tasks. Often demonstrated by strong, reliable workers, this factor is often augmented by supervisory deficiencies, lack of discipline and/or mission pressure.

(3) **Mission Pressure.** If the conditions involved in completing a maintenance task(s) cause excessive pressure (actual or perceived). These conditions are often present during exercises, sortie surges, deployments, heavy flying schedules, etc.

(4) **Unit Manning.** If there are not enough personnel assigned to the mishap unit (below authorized manning, etc.) to accomplish unit mission tasking. Also a factor if unit manning is full, but critical skills or experience are lacking.

(5) **Supervision:**

(a) **Workcenter Supervision-**when supervision is inadequate. These deficiencies are characterized by failure to monitor maintenance operations, provide close supervision, or written/oral guidance as required.

(b) Squadron Supervision-Same as above except at squadron level.

(c) Wing Supervision-Same as above except at wing level.

(d) MAJCOM Supervision-Same as above except at MAJCOM level.

(e) Inexperienced Supervision. When supervision is inadequate because of inexperience on the specific aircraft. This concerns technical aircraft expertise. Less than 2 years may be considered inexperienced, but total overall background should also be considered.

(6) Discipline Breakdown-When either a person wilfully violates known directives or when they knowingly bend, stretch, or ignore directives. Examples are shortcuts, workarounds. Breakdown may be imposed by unit mission pressure.

(7) Tech Data-When tech data is clearly deficient. A lack of description of generally known procedures (such as buttoning up panels when job completed) is not considered reason for using this factor.

(8) Procedures:

(a) Inadequate Procedures-When the procedures for accomplishing a task(s) are clearly inadequate.

(b) Nonexistent Procedures-When procedures do not exist.

(c) Multiple Procedures-When procedures to accomplish a task are dispersed to numerous sources (local checklists, MOIs, SOIs, etc.) and adversely impact the ability of the technician to efficiently accomplish the task without missing a step.

(9) Field Quality Control/Assurance-When actions by the field level quality function were inadequate or inappropriate (usually involves inadequate quality inspection or sampling).

(10) Time of Day. Provide the day and approximate time the tasks which may have contributed were performed. This may have been several days before the mishap.

(11) Weather conditions. Provide the existing weather conditions at the time the task was performed. Include temperature, wind, chill factor, precipitation, darkness, etc.

(12) Field Working Conditions. Conditions which caused excessive difficulty in completing the task(s) or doing the work properly. Examples are inadequate lighting, tools, facilities, personnel, noise, etc.

D. LOGISTICS (DEPOT/ACQUISITION). Factors identified which are the responsibility of either the depot or acquisition process need to be separated from those at unit level. Many of the unit level definitions also apply at the depot/acquisition level. When this occurs, it must be clearly assigned to the correct source to allow correct identification of the problem. The following are depot and acquisition peculiar factors:

(1) Depot Quality Assurance. When actions by the depot level

quality function were inadequate or inappropriate (usually results from inadequate inspection or sampling).

(2) **Design Deficiency.** If aircraft systems or components are inadequately designed and the system or component contributed to the mishap.

(3) **Management Action.** When a corrective action for a known deficiency was delayed or not completed as a result of lack of action by logistics management.

(4) **Faulty Overhaul Workmanship Quality.** Used to identify overhaul quality problems, including faulty work., inadequate inspection/procedures, or the use of faulty parts.

(5) **Modification Philosophy/Policy.** Similar to "acquisition philosophy/policy" except that modification rather than acquisition problems are identified. Deficiencies in modification classification, prioritization, funding, or scheduling are examples of this factor.

(6) **Acquisition Philosophy/Policy.** When during acquisition, equipment was acquired with known design deficiencies or the supplier was unable to meet specifications or supply requirements.

(7) **Attrition Replacement.** When a decision to replace known deficient parts by attrition rather than by time compliance technical order directed time change or replacement results in further mishaps.

(8) **Corrective Action Underway.** When corrective action has been initiated to correct a known deficiency but the mishap aircraft has not been modified and others of the same MDS have. The corrective action was not timely enough to prevent further mishaps.

(9) **Inadequate Corrective Action.** When corrective action has been completed but was not adequate to solve the problem. Examples are TCTOs that only fixed part of a problem or created other problems.

(10) **No Corrective Action Taken.** When no corrective action has been taken to fix an identified deficiency (usually considered an isolated occurrence) and subsequent mishaps occur from the same problem.

(11) **Depot Working Condition.** Conditions under which individual(s) work which cause excessive difficulty in completing work or doing work properly. Examples are extreme climatic conditions, extreme noise or other environmental conditions.

3-11. **FINDINGS, CAUSES, AND RECOMMENDATIONS.** The most important part of mishap investigation is developing findings, causes, and recommendations. The goal is to decide on the best preventive actions to preclude mishap recurrence. To accomplish this purpose, the investigator(s) must list the significant events and circumstances of the mishap sequence (findings). Then they must select from among these the events and conditions that were causal (causes). Finally, they suggest courses of action to prevent recurrence (recommendations).

3-12. **FINDINGS:**

A. DEFINITION. The findings are the conclusions of the board. They are based on the weight of evidence, the board's professional knowledge, and its best judgment. They are statements of significant events or conditions leading to the mishap. They are arranged in the order in which they occurred. Though each finding is an essential step in the mishap sequence, each is not necessarily a cause factor. (See the examples in paragraph 3-15.)

B. DETERMINATION:

(1) Deciding on findings means isolating each significant event or condition which sustained the sequence leading to the mishap. These findings must then be listed in the order in which they occurred. In some cases (see examples 5 and 6) the sequence starts well before the mishap itself. In all cases, the sequence must be carried through the point where all damage or injury has occurred. The mishap may result in an escape, survival, or rescue which is not directly related to the mishap itself. If deficiency led to injury (major/minor) or death list these events as a separate sequence of findings (causes) under the heading of Life Sciences Findings (see example 6).

(2) Each finding must be a clear statement on a single event or condition. Do not include cause and effect in the same finding. Number the findings consecutively. Each number should be preceded by the word "Finding" (such as Finding 1, Finding 2, and so on). Samples of findings for various types of mishaps are listed in paragraph 3-15. Do not include the names of persons in statements of findings. Supporting evidence need not be included in the finding because the board has already documented it in the analysis. However, each finding must have a logical connection to the other findings. This is, in fact, a good way to test findings. If there is no logical relationship with other findings, then the sequence of the mishap has not been correctly described. For example, the board might find that a pilot was not qualified to fly that plane on that mission. This might be a finding if the board could show a logical connection between that condition and those that followed. On the other hand, the board might determine that the pilot was qualified to fly. That determination might be equally important to the investigation, but it would not be listed as a finding. The board could not show a logical connection between that condition and those that followed.

(3) There will be cases where the board cannot pinpoint a particular event in a sequence. Even knowing the event, sometimes the board cannot find why it happened. Here, the board must keep in mind that it is not yet dealing with cause factors. Some latitude in stating sequential findings is permissible. List as much of the sequence as you can support. Then state what part of it is undetermined. (See flight mishap examples 7 and 8.) Where there are supportable alternatives, identify them as such and list them in sequence. Show these as subordinate to the finding(s) to which they apply. Do not list all of the possible alternatives that could

have existed merely because they cannot be conclusively eliminated. This sort of conjecture may be all right in the analysis section. However, the findings should contain a reasonable measure of probability based on evidence, professional knowledge, and good judgment.

3-13. CAUSES:

A. **DEFINITION.** Causes are those findings which, singly or in combination with other causes, resulted in the damage or injury that occurred. A cause is a deficiency the correction, elimination, or avoidance of which would likely have prevented or mitigated the mishap damage or significant injuries. A cause is an act, an omission, a condition, or a circumstance, and it either starts or sustains the mishap sequence. A cause may be an element of human or mechanical performance. An environmental condition may be a cause if it was not reasonably avoidable. Findings which sustained the mishap sequence, but which were normal to the situation as it developed, are not causes. (See examples 3, 4, and 5 below.) These are often the unavoidable effects of a preceding cause. Apply the "reasonable person" concept when determining the causes. If a person's performance was reasonable, considering the mishap circumstances, do not assign cause. It is not appropriate to expect extraordinary or uniquely superior performance in activities.

B. **DETERMINATION.** After the board has listed its findings, it should choose those findings which are causes. These are identified by adding the word (CAUSE) to the finding. It is not necessary to list the causes under a separate heading. Not every event in a properly developed sequence is causal. Some are really effects or results, even though their inclusion in the sequence is material to the mishap. If, for example, an engine flames out because a fuel pump fails, concern is rightfully with the fuel pump. If the fuel pump has failed, the engine failure is a normal result and not causal. In a different sequence, perhaps the pump failure would, itself, be the result of some earlier cause. An environmental condition, such as birdstrike, lightning, high wind, or flood, could be a cause if it was unavoidable. (See flight mishap example 4.) In most cases, mishaps will have several causes which acted in combination to produce damage and injury. Do not assign priorities to the causes with such terms as "primary," "contributing," "main," "most important." The wording of a cause should be a clear and simple statement of a single condition or an event. After final determination of cause is made, the Directorate of Aerospace Safety assigns the causes to cause factor categories. These are in the letter of final evaluation.

3-14. RECOMMENDATIONS:

A. **DEFINITION.** The recommendations are actions which will likely prevent a similar mishap or reduce its effects. The recommendations must be feasible and related to the causes of the mishap or the significant injuries. Actions not related to the causes of mishaps or fatal/major/minor injuries should be handled per paragraph 12-14. Do not

identify the causes(s) which generated each recommendation. Every cause need not have a related recommendation.

B. DETERMINATION. Recommendations may vary in scope. Some actions can be taken at unit level. Other recommendations need actions by MAJCOMs or other agencies. List the recommendations as a separate major topic immediately following the findings. The recommendations are numbered consecutively. Do not use more than one set of recommendations. Recommendations to prevent mishaps and injuries are included in one set of recommendations. Each number is preceded by the word "Recommendation" (such as Recommendation 1, Recommendation 2). Include only one recommendation in each statement. If a separate recommendation is needed, use another number rather than a subgrouping such as 1a, 1b, and so forth. Be sure to identify the correct action agencies. Do not list the Directorate of Aerospace Safety or Nuclear Surety as an action agency in lieu of appropriate organizations that manage or control the resources involved. Recommendations to brief selected groups of personnel on the mishap are also unnecessary. Doing so is a basic command responsibility. Recommendations must also allow for definitive closing action. It is not appropriate to include sweeping or general recommendations which cannot be closed by the action agency. Likewise, vague recommendations which address the importance of simply doing one's job properly are inappropriate. Sometimes, the action to be taken depends on tests or analyses which are incomplete when the report is sent in. If so, explain this and give a reference which will permit future correlation.

C. RECOMMENDATIONS FOR CHANGES TO PUBLICATIONS. Frequently, mishap investigations result in recommendations for changes to Technical Orders of Flight Manuals/Check-lists. When this happens, the investigator(s) must submit, through channels, appropriate AFTO Forms 22 (see TO 00-5-1) or AF Forms 847. Recommendations for flight manual/checklist changes (AF Forms 847) should be submitted IAW the Emergency Critical Safety Hazard procedures contained in AFR 60-9. In all cases, ensure that the reason for recommended change section of AFTO Form 22 or AF Form 847 is sanitized according to paragraph 1-9h.

3-15. EXAMPLES OF FINDINGS:

A. FLIGHT MISHAPS. Examples of flight mishap findings are listed below. Causes have been identified only to illustrate how they are to be shown in the report. They are not to serve as examples of causes. See paragraph 3-13 for definition and determination of causes.

(1) Example 1:

(a) Findings:

1. Finding 1. (CAUSE) Shortly after takeoff, No. 1 engine fire warning light came on for an undetermined reason.

2. Finding 2. The pilot shut down No. 1 engine and started an immediate recovery.

3. Finding 3. (CAUSE) On final approach, the pilot allowed the airspeed to become excessively low.

4. Finding 4. The aircraft touched down in the overrun at an excessive sink rate.

5. Finding 5. The left main gear sheared due to overload, and the aircraft sustained major damage.

6. Finding 6. The pilot evacuated the plane without injury.

(b) Comment: The fire warning light resulted in the single-engine approach and can be considered a cause factor. Finding 3 was clearly a cause, while Finding 4 and 5 are effects or results and not causes.

(2) Example 2:

(a) Findings:

1. Finding 1. (CAUSE) Number 3 and 4, while attempting to rejoin the lead elements, failed to visually acquire each other.

2. Finding 2. The aircraft collided and went out of control.

3. Finding 3. Both pilots ejected successfully, and neither was injured.

4. Finding 4. Both aircraft were destroyed.

(b) Comment. Self-explanatory.

(3) Example 3:

(a) Findings:

1. Finding 1. Enroute winds were forecast to have a 50-knot headwind component.

2. Finding 2. En route, the pilot encountered 100-knot headwinds.

3. Finding 3. (CAUSE) The pilot decided to continue his or her cross-country flight, overflying several bases which were weather-free and operational.

4. Finding 4. Five miles short of destination, the aircraft flamed out due to fuel exhaustion.

5. Finding 5. The pilot ejected successfully.

6. Finding 6. The aircraft was destroyed.

(b) Comment. In this sequence, a weather problem existed, but it did not cause the pilot to continue the flight until flameout. Under different circumstances (over ocean and committed to continue), both the forecast and the headwinds encountered might be causes.

(4) Example 4:

(a) Findings:

1. Finding 1. The route weather forecast was for clouds from 10,000 to 30,000 feet. Thunderstorms, hail, or turbulence were not forecast.

2. Finding 2. (CAUSE) While flying in the weather at 27,000

feet, the aircraft encountered moderate hail and suffered substantial damage.

(b) Comment. This assumes that the hail was not forecastable.

(5) Example 5:

(a) Findings:

1. Finding 1. (CAUSE) Maintenance records did not identify the requirement to time-change the MLG rod attach pin, and it was continued in service too long.

2. Finding 2. The pin failed on takeoff due to excessive wear.

3. Finding 3. Due to failure of the pin, the right MLG collapsed.

4. Finding 4. Without the right MLG wheel, directional control was lost and the aircraft departed the runway.

5. Finding 5. (CAUSE) The aircraft struck a nonfrangible runway distance marker which ruptured a fuel cell.

6. Finding 6. Fuel from the ruptured cell was ignited and the aircraft caught fire.

7. Finding 7. After the aircraft stopped, the flightcrew egressed without injury.

8. Finding 8. The aircraft was destroyed by fire.

(b) Comment. In this case, Finding 2, 3, and 4 are results of leaving a MLG pin in service until it wore out. Finding 5 is harder to see. Runway markers are supposed to be frangible so that they can be hit without too much damage. This one was not, therefore, a cause of the total damage. In other circumstances, the aircraft might leave the runway and hit another kind of obstruction (RSU unit, perimeter fence). Here, damage might be considered the expected result of leaving the runway under such condition. In those cases, the obstruction would not be causal.

(6) Example 6:

(a) Findings. (Mishap Sequence:)

1. Finding 1. (CAUSE) At depot overhaul, a pair of pliers was left inside an aircraft bulkhead in the vicinity of station 620.

2. Finding 2. (CAUSE) During inspection of work performed at overhaul, the pliers were not discovered.

3. Finding 3. During an ACM mission 45 hours after overhaul, the pliers jammed the stabilator control preventing stabilator movement.

4. Finding 4. The aircraft departed controlled flight and the crew ejected.

5. Finding 5. The aircraft was destroyed.

(b) Findings. (Life Sciences Sequence No. 1:)

1. Finding 1. (CAUSE) At some unknown time, a zero delay initiator was installed in the front seat instead of a 1-second delay initiator.

2. Finding 2. The front seat pilot ejected during uncontrolled flight at low altitude.

3. Finding 3. The pilot separated from the seat prematurely, resulting in the pilot's parachute becoming entangled with the ejection seat.

4. Finding 4. The pilot was fatally injured on ground contact.

(c) Findings. (Life Sciences Sequence No.2:)

1. Finding 1. The rear seat pilot ejected during uncontrolled flight at low altitude.

2. Finding 2. (CAUSE) All egress mechanisms functioned correctly, but the rear seat pilot fractured his leg during landing on rocky terrain.

(d) Comment: This shows a mishap with a distinct and separate life support sequence.

(7) Example 7:

(a) Findings:

1. Finding 1. (CAUSE) The outboard torque tube chain failed for undetermined reason.

a. The chain failure could have resulted from failure to reinstall cotter keys during inspection.

b. The chain failure could have resulted from materiel failure of one of the unrecovered chain links.

2. Finding 2. As a result of the chain failure, flap retraction was asymmetric.

3. Finding 3. (CAUSE) The pilot let asymmetric retraction continue without determining the extent of the malfunction.

4. Finding 4. Continued asymmetric retraction resulted in minor damage to the aircraft.

(b) Comment. Finding 1 has an undetermined aspect. Findings 1a and 1b are probably supported in the narrative, but not conclusively. Finding 2 is a result, not a cause. Finding 3 is a cause because the pilot knew of the asymmetric retraction and did not stop it. Finding 4 is an expected result of letting the asymmetric retraction continue.

(8) Example 8:

(a) Findings:

1. Finding 1. (CAUSE) The pilot elected to take off in an aircraft with a known engine discrepancy-low EPR.

2. Finding 2. (CAUSE) The N-1 compressor failed for undetermined reasons causing catastrophic internal damage and loss of thrust.

a. The N-1 compressor failure could have been caused by a fifth or sixth state blade lock failure brought on by corrosion.

b. The N-1 compressor failure could have been caused by a fifth or sixth state blade failure brought on by corrosion.

3. Finding 3. The pilot ejected successfully.

4. Finding 4. The aircraft was destroyed.

(b) Comment. Self-explanatory.

B. MISSILE MISHAPS. An example of missile findings is listed below. Causes have been identified to illustrate how they are to be shown in the report. They are not to serve as examples of causes.

(1) Finding 1. (CAUSE) The team chief of electromechanical team 1 failed to properly document site configuration on pertinent AFTO forms.

(2) Finding 2. (CAUSE) the team chief of electromechanical team 2 failed to make sure that the missile guidance set (M[GS]) unbilical coolant lines were connected to the MGS prior to MGS startup. This is required by TO 21M-LGM30XXX.

(3) Finding 3. The epoxy seal of the computer cold plate become unbonded due to excessive heat from MGS operation without coolant.

(4) Finding 4. The missile, MGS, and propulsion system rocket engine were damaged by sodium chromate solution (coolant). This had leaked from the computer cold plate following MGS operation after coolant lines had been attached.

C. GROUND MISHAPS. Three examples of suggested ground mishap findings are shown below:

(1) Example 1:

(a) Finding 1. A qualified crane crew was assigned to erect several poles to be used as temporary antennas.

(b) Finding 2. (CAUSE) the supervisor failed to analyze the job site for potential hazards, and, as a result, overlooked a high-voltage power line in the work area.

(c) Finding 3. (CAUSE) While erecting one of the poles, the crane operator struck a high-voltage overhead power line with the crane boom.

(d) Finding 4. A crewmember handling a guide cable line, was electrocuted when current flowed through the guide cable to the ground.

(2) Example 2: (a) Finding 1. An AFMV driver and assistant were assigned to deliver high priority items to "X" AFB 6 hours distant. They were directed by their supervisor to remain overnight for crew rest.

(b) Finding 2. (CAUSE) After delivery, the driver decided to return to Home AFB, although they had been on duty for 10 hours.

(c) Finding 3. During the return to home base, the vehicle operator was traveling 20 MPH over the posted speed limit.

(d) Finding 4. (CAUSE) Because of the self-extended work period, the assistant was sleeping and the driver fell asleep at the wheel.

(e) Finding 5. The vehicle departed the highway and rolled over, fatally injuring both occupants.

(3) Example 3:

(a) Finding 1. (CAUSE) A scheduled NDI inspection was not performed on a rotary lawn mower allowing a damaged blade to go undetected.

(b) Finding 2. Two airmen were dispatched with the defective mower to mow high grass on a field.

(c) Finding 3. (CAUSE) The airman in charge failed to inspect the area to be mowed for hazards.

(d) Finding 4. During the mowing operation, the mower struck a large rock and the damaged blade failed.

(e) Finding 5. The failed blade struck the assisting airman in the head inflicting fatal injuries.

D. SPACE MISHAPS. An example of space mishap findings is listed below. Causes have been identified to illustrate how they are to be shown in the report. They are not to serve as examples of causes.

(1) Finding 1. (CAUSE) Design criteria for refilling the reusable solid rocket motors do not require verification of motor case structural integrity subsequent to the last cleaning action and prior to reloading.

(2) Finding 2. Hydrostatic testing at 1.2 times the normal operating pressure, conducted prior to cleaning, did not reveal any defects in the rocket motor casing.

(3) Finding 3. (CAUSE) Undetected erosion of motor casing material during cleaning resulted in an excessively thin area in the forward dome of the motor casing.

* * *

CHAPTER 5 AIRCRAFT FLIGHT MISHAP REPORTING

5-1. GENERAL INFORMATION. Mishaps are categorized as aircraft flight mishaps based on the mode of operation at the time of occurrence. The term includes mishaps that occur during all aircraft operations when "intent for flight" exists (paragraph 5-2c). Flight mishaps are classified as explained in paragraph 2-4, according to the severity of the resulting injury, occupational illness, damage, or mishap potential.

5-2. TERMS EXPLAINED:

A. AIR FORCE AIRCRAFT:

(1) This term means all manned vehicles that are supported in flight by buoyancy or dynamic action (including manned aircraft RPVs). It includes those that are owned or leased by the US Air Force, US Air Force Reserve, or Air National Guard of the US and are:

(a) Operated and exclusively controlled or directed by the US Air Force; or

(b) Furnished by the Air Force (GFP), or leased, to a non-Air Force organization when the Government has assumed ground and flight risk; or

(c) Assigned for the use of an Air Force liaison officer with Civil Air Patrol.

(2) The term also includes any aircraft that are under test by the Air Force, including aircraft furnished by a contractor when operated by an Air Force aircrew.

(3) The term does not include aircraft that are:

(a) Leased (except as stated above) to contractors, commercial airlines, or foreign governments when the lessee has assumed risk of loss;

(b) Loaned to other government agencies;

(c) Civil air carrier aircraft owned by civil operators and flying contractor air missions for the Air Force;

(d) Factory-new production aircraft not formally accepted by the Air Force (see paragraph 1-5f);

(e) Air Force aircraft assigned to the Civil Air Patrol;

(f) Aircraft of other military services, even when they are taking part in a joint air operation controlled by the Air Force;

(g) Air Force aero club aircraft.

B. MISHAPS WHICH ARE REPORTABLE DUE TO MISHAP POTENTIAL. Some events are reported as flight mishaps, even though they did not result in damage or reportable injury. They are reported because they have significant mishap potential. These reports are used in developing and taking preventive actions before they produce more serious results. These mishaps include high accident potential (HAP) mishaps (paragraph 5-4f), certain engine malfunctions (paragraph 5-4g(1)), and physiological episodes (paragraph 5-4g(2)).

C. INTENT FOR FLIGHT. This condition is necessary for a mishap to be reported as a flight mishap. It exists when an Air Force aircraft engine is started for the purpose of commencing authorized flight. Intent for flight continues until the aircraft comes to rest with the engine(s), propeller(s) or rotors stopped and brakes set or wheel chocks in place. An aircraft's engine is started when a intentional attempt is made to set the engine in motion. The power source may be either internal or external to the aircraft. For amphibian aircraft landing on the water, intent for flight continues until all normal flight operations have ended. It ceases when the engines have been stopped and the aircraft has been either moored or taken in tow.

5-3. CLASSIFYING AIRCRAFT FLIGHT MISHAPS. Mishap classification is based, in part, on the costs of damage to Air Force and non-Air Force equipment and property. Early determination of these costs is needed to classify, investigate, and report the mishap. As soon as possible, the investigating commander needs an estimate of all damages. This estimate is used to classify the mishap and convene the right kind of investigation. These early estimates may be adjusted later to reflect a more systematic evaluation conducted during the investigation. However, a fairly accu-

rate classification can usually be made when first surveying the damage. See paragraph 2-5 for instructions on determining mishap costs.

5-4. FLIGHT MISHAP REPORTING REQUIREMENTS:

A. FORMAL REPORT REQUIREMENTS FOR CLASS A FLIGHT MISHAPS. These mishaps normally require formal reports, as well as message reports (see c below for a specific exception). Large-scale board investigations almost always call for formal reports. The Director of Aerospace Safety may decide in some cases that a formal report is not needed (paragraph 4-3b tells how to request a waiver).

B. FORMAL REPORT REQUIREMENTS FOR CLASS B FLIGHT MISHAPS. Class B flight mishaps require formal reports as well as message reports if the investigation is complex. The Director of Aerospace Safety may determine in some cases that a formal report is not needed. See paragraph 4-3b for waiver instructions.

C. FORMAL REPORT REQUIREMENTS FOR CLASS A OR B MISHAPS INVOLVING ONLY ENGINE DAMAGE. Class A or B mishaps which are so classified because of engine FOD (including bird ingestion) do not require formal reports. This exemption does not apply if a fatality or permanent disability results, or if damage is not limited to the engine(s). Under this exemption, reporting requirements are the same as for Class C mishaps. Command indorsements are not required. A letter of final evaluation will not be prepared on these mishaps.

D. FORMAL REPORT REQUIREMENTS FOR CLASS A AND B FLIGHT MISHAPS WHEN THE AIRCRAFT IS NOT DAMAGED. Although mishaps are classified according to severity of damage, injury, or occupational illness, the reporting requirements are based on other factors. The following instructions discuss these special cases:

(1) Mishaps Occurring During Air Drop Operations:

(a) Parachuting Injuries. Such injuries of Air Force personnel while performing official duties are ground mishaps. Refer to chapter 6 for investigation and reporting requirements. Injuries to other military service personnel during parachute jumps from Air Force aircraft are reported by the other services. An exception would be if the injured persons are permanently assigned to an Air Force unit. The Air Force takes part in these investigations when requested by the other service. This may occur if Air Force equipment or techniques are involved.

(b) Air Force equipment damages as a result of being airdropped is categorized as a ground mishap. Damage to airdropped equipment belonging to other services is reportable by the service experiencing the loss. The Air Force takes part in these investigations when requested by the other service.

(c) Injury or damage may occur to persons or property on the ground because an airdropped load impacted off the drop zone. This is categorized as a flight mishap. The following reports are required:

1. Message reports: Preliminary and final progress reports only.

2. Formal report: As called for in (2)(b) below.

(2) Fatalities or reportable injuries as a result of being struck by an aircraft (with intent for flight). This includes being struck by an object dropped from or propelled by an aircraft.

(a) Message reports: Preliminary and final progress report only.

(b) Formal reports: An abbreviated formal report consisting of at least the following:

1. AF Form 711.

2. AF Form 711b, Aircraft Flight Mishap Report.

3. AF Form 711c, if maintenance, materiel, or design deficiency was a cause.

4. AF Form 711gA, Life Sciences Report of an Individual involved in an AF Accident/Incident Section A, Aircraft Accident/Incident, for:

a. Aircrew member(s) assessed as a cause of the mishap.

b. Air Force individual sustaining the injury.

5. Narrative of investigation/analysis, findings, and recommendations.

6. AF Form 711h, USAF Mishap Report Checklist and Index.

NOTE: This report is submitted in the two-part format.

(3) Fatal or other reportable injury or illness to an occupant of an Air Force aircraft from any cause. Submit the reports as in (2) above.

(4) Property damage resulting from an Air Force aircraft operation when there is no reportable damage to the aircraft.

(a) Message reports. Standard message reports for damage in excess of \$100,000 or when fatality or permanent disability occurs. Preliminary and final progress report only (or preliminary/final report) for lesser damage or injury.

(b) Formal Report. If damage is \$100,000 or more, an abbreviated formal report, consisting, as a minimum, of the following:

1. AF Form 711.

2. AF Form 711b.

3. AF Form 711c, if maintenance, materiel, or design deficiency is a cause.

4. AF Form 711gA for aircrew member(s) assessed as a cause of the mishap.

5. Narrative of investigation/analysis, findings, and recommendations.

6. Statement of damage to private property, if applicable.

7. AF Form 711h.

NOTE: This report is submitted in the two-part format.

E. NTSB REPORTS OF ACCIDENTS INVOLVING AIR FORCE AIRCRAFT. The Director of Aerospace Safety Decides if the Air Force will take part in the NTSB investigation. The investigating major commander is normally required to conduct a separate investigation of the mishap. However, this may be waived, based on mutual agreement between the major commander and Director of Aerospace Safety. The decision will be made if it is found that the NTSB report is adequate for Air Force purposes.

F. FLIGHT HAP MISHAPS. Report HAP mishaps according to paragraph 4-3d. Submit flight HAP mishap messages as preliminary reports, followed by one or more progress reports. The investigating commander or higher authority may decide that a formal report is also required. The action ALC, or other agency with engineering responsibility, sends HQ AFISC/SER a copy of each TDR. This copy should include all supporting documents such as metallurgical analyses, photographs, test reports, and the like. The types of events designated flight HAP mishaps are:

(1) Loss of thrust sufficient to preclude maintaining level flight at a safe altitude.

(2) Engine case penetration by shrapnel from internal engine component failure.

(3) Engine case rupture or burn-through, engine bay fire, or massive fuel leakage.

(4) Emergency landing of a single engine aircraft with imminent engine failure confirmed after landing. (Includes precautionary landing by helicopter with imminent engine or rotor drive system failure confirmed after landing.)

(5) Unselected propeller or thrust reversal.

(6) Flight control malfunction (including helicopter flight control, stability augments, autopilot, and trim systems) resulting in an unexpected, hazardous change of flight attitude, altitude, or heading.

(7) Spillage or leakage of radioactive, toxic, corrosive, or flammable material from aircraft stores or cargo, that in the judgment of the reporting official, is a significant hazard to the crew/passengers or aircraft. Base this judgment on whether a similar event could result in serious injury, illness, or damage. In item 9 of the mishap message, identify which agency or unit prepared the shipment. Also, if cargo is shipped under a waiver, tell which agency (MAJCOM, NAF, etc.) granted the waiver.

(8) In-flight loss of all pitot-static instrument indications or all gyro-stabilized attitude indications.

(9) Any other event which, in the judgment of the reporting official, is a significant hazard to the crew or aircraft. Base this judgment on whether a similar event could result in serious injury, illness, or damage. This includes emergency conditions arising from aircraft operation, or from the failure or malfunction of systems or components that are essential to safe flight.

G. OTHER EVENTS REPORTABLE AS CLASS C MISHAP. Certain other events are reportable as Class C mishaps even though they may not meet the damage, injury, or illness criteria for Class C. Do not include damage costs in reports of these mishaps, unless reportable damage, as defined in paragraph 5-2b, occurs.

(1) Any flameout, engine failure, or required engine shutdown with intent for flight is reported as a Class C mishap under the following conditions:

(a) For single- and twin-engine aircraft, report all such events.

(b) For aircraft with three or more engines, report only those events involving two or more engines.

NOTE: For B-52 aircraft the shutdown of two engines in the same pod is considered a single engine shutdown when the second engine has no damage or mechanical malfunction and the reason for shutdown is purely precautionary.

(c) Intentional shutdown for training, FCF, or other nonemergency purposes are not reported. Failure to restart is reported using the above criteria.

(2) A Physiological Episode. A physiological reaction, near accident, or hazard in flight due to medical or physiological reasons. Physiological episodes are reported as Class C Mishaps, even though they may not meet the damage, injury, or illness criteria. Except as noted, report on all involved-both crew and passengers unless passenger is a patient experiencing a consequence of his or her infirmity. Physiological episodes are in-flight events of a physical, physiological, medical, pathological, psychological, pharmacological, or toxicological nature which compromise performance, confuse, disorient, dull, distract, pain, endanger or incapacitate. As a minimum these include:

(a) Hypoxia-Suspected or proven.

(b) Hyperventilation-Crew only.

(c) Decompression sickness, from evolved gas (skin, manifestations, bends, chokes, neurological or neurocirculatory involvement).

(d) Mechanical effects of trapped gas (Barotitis, Barosinusitis, Barodontalgia, Abdominal pain if un-relieved).

(e) Unintentional explosive or rapid decompression which exposes personnel to cabin altitude above FL 250, regardless of whether decompression sickness or Hypoxia occurs.

(f) Spatial Disorientation, Vertigo, Visual Illusions, or Distraction resulting in an unusual attitude-crew only.

(g) Loss of Consciousness from any cause.

(h) Exposure to toxic, noxious or irritating materials, such as smoke, fumes; or liquids.

(i) Carbon Monoxide poisoning.

(j) Illness, (both acute and pre-existing) including food poisoning; Dehydration; Myocardial infarction, Seizure, etc.

(k) Drugs (legal and illicit, prescribed or nonprescribed) crew only, unless waived by proper authority and no factor in incident.

(l) Alcohol and hangover. Crew only.

(m) Occupational illness resulting in lost workday. Crew only.

(n) Injury exceeding criteria of minimal.

(o) Extreme heat or cold.

(p) Any ejection or extraction from an aircraft, not otherwise reportable.

(q) Death.

(r) Any other episode considered appropriate by the flight surgeon or flying safety officer.

If unsure whether the factors or reactions constitute a Physiological Episode, contact HQ AFISC/SEL, AV 876-3458 or HQ AFMSC/SGPA, AV 240-2034 for assistance and clarification.

(3) Physiological episodes reported according to (2) above also require sending AF Forms 711qA. Refer to paragraph 11-3a(2), 11-4c, and table 12-1 line 17.

H. SPECIAL F-15 ENGINE STALL/STAGNATION REPORT. This report applies to F-15 engine flameout or engine shutdowns required as a result of an engine anomaly when there is no aircraft or internal engine damage. Report by routine message not later than 30 calendar days after the mishap. Reporting units may combine more than one mishap in a single message. When this is done, establish a separate part of the message for each occurrence and repeat the format in each part. Prepare messages according to figure 4-1 and the following additional instructions.

(1) Addresses. Send messages only to the following addresses (do not use any AIG):

(a) HQ AFISC NORTON AFB CAAF /SERAF /

(b) HQ TAC LANGLEY AFB VAAF /SEAF /

(c) HQ PACAF HICKAM AFB HIAF /SEAF /

(d) HQ USAFE RAMSTEIN AB GEAF /IGFAF /

(e) HQ AFSC ANDRES AFB MDAF /IGFAF /

(f) HQ AFLC WPAFB OHAF /QA/LOA/IGYAF /

(g) ASD WPAFB OHAF /TAF/YZF/YP/YF/SEAF /

(h) NGB WASH DCAF /SEAF /

(2) Subject. Special Flight Engine Stall/Stag Report, F-15, Date, Unit Report Number (add S/S to end of unit report number).

(3) Items 1, 2, 3, 4, and 5. Report as indicated.

(4) Items 6, 7, and 8. Not applicable.

(5) Item 9. Report only the following information:

(a) Altitude.

- (b) Airspeed.
- (c) Activity. State type of maneuver being performed.
- (d) Work Unit Code (WUC).
- (e) How Malfunction Code (HMC).
- (f) Engine Position (left or right).
- (g) Engine type/designation.
- (h) Engine serial number.
- (i) Time since installed (TSI).
- (j) Restart altitude.
- (k) "G" load at time occurrence.
- (l) Throttle movements prior to occurrence and position at time of occurrence.
- (m) Angle of attack (AOA).
- (n) Max FTIT.
- (o) Remarks. Causes and corrective action. Also state whether the engine has been modified with PLAP retard and state the EEC configuration (for example IV-D-2).
- (6) Items 10, 11, 12, and 13. Not applicable.
- (7) Item 14b. Furnish CAT 1 MDR control numbers when applicable.
- (8) Item 15. Report as indicated.

I. SPECIAL REPORT OF MISHAPS INVOLVING HYDRAULIC FLUID. This report applies to all USAF units converting to the less flammable hydraulic fluid (MIL-H-83282). The purpose of this special reporting is to determine the effectiveness of the less flammable hydraulic fluid (MIL-H-83282). Hydraulic fluid samples will be taken immediately following a mishap where hydraulic fluid has been determined or is suspected to be the primary combustible fluid in the fire. A sample will also be taken on all High Accident Potential (HAP) mishaps where the potential for hydraulic fluid fires exist. Identify the sample with aircraft MDS and mishap control number and forward to Transportation Officer, WPAFB OH 45433, Attn: Detachment 13, SFQLA, Building 70, Area B. Detachment 13 will analyze the sample and determine the percent of mixture of MIL-H-83282 and MIL-H-5606. Following the analysis, Det 13 will report the results by routine message to the mishap board president or investigator with information copies of the analysis report to:

- (1) SA-ALC Kelly AFB TX/SFQT.
- (2) AFWAL WPAFB OH/MLSE.
- (3) HQ AFISC Norton AFB CA/SESO.

J. COMBINED MISHAP AND MATERIEL DEFICIENCY REPORTS. Materiel deficiency is often identified as the only cause(s) of a Class C or HAP flight mishap. In this case, a combined Class C or HAP mishap report and Category I MDR may be submitted. Use the format in TO 00-35D-54, section III. Include Class C or HAP and Cat I MDR control num-

bers. Report using the schedule in table 4-1. If time criteria cannot be met, submit separate reports. Add the addresses required in table 4-2 to those required by TO 00-35D-54. Do not duplicate addresses. Safety is responsible for preparing item 22 (the safety portion) of the combined report. Submitting a combined report eliminates the need for a separate mishap report message. The final MDR reply can constitute closing action. The combined Class C or HAP mishap report and Category I MDR is not a limited-use report, nor is it For Official Use Only.

K. **REPORTING MISHAPS OF AIRCRAFT COMMON TO OTHER US MILITARY SERVICES AND THE US COAST GUARD.** When flight mishap involves any of the aircraft or engines in table 4-3, send the message reports to the agencies indicated.

(1) The exchange of formal flight safety reports between the Services is limited to the respective safety centers only.

(2) US Air Force commanders who:

(a) Need information from Army, Navy, or Coast Guard safety reports send request to HQ AFISC/SER, Norton AFB CA 92409.

(b) Receive request from the Army, Navy, or Coast Guard for information from Air Force safety reports send these requests to HQ AFISC/SER, Norton AFB CA 92409.

5-5. **REPORTING MISSING AIRCRAFT.** Procedures for initial message reporting of missing aircraft are in AFR 55-5. A missing aircraft is considered a Class A mishap when it has been missing for 10 days. If the major effort of the search is ended earlier, the event becomes a Class A mishap at that time. Submit a preliminary report for a Class A flight mishap. The investigation is started as in chapter 3. Send reports on the same schedule as for Class A flight mishap. The 30-day calendar-day time limit starts on the date the preliminary report was sent. If the aircraft is later found, send a supplement to the formal report. Include changes in AF Forms 711, if needed, and any other data based on the reinvestigation.

5-6. **REPORTING BIRD STRIKES.** Each year, aircraft collisions with birds account for significant aircraft damage and aircrew injury. To combat this problem, specialists at the Air Force Engineering and Services Center (AFESC) administer the Air Force Bird Strike Hazard Reduction Program (AFR 127-15). They develop effective bird control techniques and work with other Air Force and civil agencies to minimize bird or aircraft strike hazards (BASH).

A. **MESSAGE REPORTS.** Bird strikes which cause reportable aircraft damage are reported according to this regulation. Using figure 4-2, include the following information in item 9 of the message:

- (1) Landing lights-on or off?
- (2) Strobe lights-on or off? (Or not applicable if not installed.)
- (3) Phase of flight (climb, touch and go, low level, etc.)
- (4) Aircraft speed. (KIAS).

- (5) Altitude (AGL and MSL).
- (6) Flight path in relation to clouds (above, below, between layers).
- (7) Species and number of birds.
- (8) Impact point on aircraft.
- (9) Was pilot warned of bird hazard?
- (10) Low level route number if applicable.
- (11) Did birdstrike result in fire?
- (12) Geographic coordinates (latitude and longitude).
- (13) Remarks.

B. BIRD IDENTIFICATION. Birdstrikes which cause reportable aircraft damage are reported according to this regulation. Unit safety officers should attempt to identify bird remains using competent local authorities. When this is not possible, send the remains to HQ AFESC/DEVN, Tyndall AFB FL 32403. Feathers are most important in the identification process. Even downy feather remnants stuck to blood smears can provide enough information to identify the type of bird (hawk, gull, duck). Requests for identification should include:

- (1) Organization requesting identification.
- (2) AFR 127-4 mishap control number.
- (3) Date of bird strike.
- (4) Type of aircraft involved in bird strike.
- (5) Description of damage and cost.
- (6) Geographic coordinates (latitude and longitude) of bird strike.

* * *

CHAPTER 12

FORMAL SAFETY REOPRTS

12-1. GENERAL INFORMATION. Formal safety reports are used to present detailed information about mishaps. They are made up of AF Form 711 series and attached exhibits. Sometimes the details of a mishap may be described in a one-page form without attachments. For more complex mishaps, a whole series of forms, supported by a detailed narrative and exhibits [are] required. The formal report is used by the Air Force to support actions to prevent mishap recurrence. It is also used for analysis and can lead to prevention actions that were not apparent to the field investigator(s). AF Forms 711a, Ground Mishap Report, are for ground and aircraft nonflight mishaps and are explained in chapter 6. The rest of this chapter deals with the full-scale formal report.

A. THE TWO-PART REPORT. The formal report has two parts: Part I, Facts, and Part II, Privileged Data. AF Forms 711 are designed for two functions. First, they show needed information for use in mishap prevention. The second function is to segregate factual information which may be disclosed outside the Air Force. In this way, the two-part report aids

retention of privileged information and protects the privacy of medical information. Use of the two-part format is not required when submitting formal ground mishap reports unless the mishap is reported as an aircraft nonflight mishap. Aircraft nonflight mishap reports require a two-part report and the special limited use markings according to paragraph 4-10a(2)(b). All other ground mishap reports should be completed according to paragraph 6-8.

B. **ASSEMBLING THE TWO-PART REPORT.** Assemble the report on both sides of a lightweight folder (for bulky reports, use hard pressboard folders). Use AF Forms 711i and j for tab dividers. You may type on both sides of the pages (head to foot, for top-edge mounting), but leave at least 1 and 1/2 inch margin at the mounting end. Place the index tabs on the right edge of all dividers, regardless of which side of the folder they go on. Arrange the tabs in alphabetical order, starting at the top of the page. Number all pages in order and by tab; for example, A-1, A-2, X-1, X-2, and Y-2. Place part I on the right side of the folder, and part II on the left side. If the report is so bulky that it is hard to fit both parts into one folder, you may put each part in a separate folder. Attach the tops of the pages to the folder with metal fasteners. Be sure to leave enough clearance in the center of the folder, so you can close it easily.

C. **AF FORM 711H, USAF MISHAP REPORT CHECKLIST AND INDEX.** This form is used to make sure reports are uniform and complete. Write an X for each item in the columns "Not Applicable," "Applicable Not Attached," or "Attached[.]" When the "Applicable Not attached" block is checked, explain why in the "Remarks" section. Estimate the date the missing attachment will be sent for inclusion in the report. If an attachment will be sent later, insert a page with the proper lettered tab in the report. Later, when the attachment is sent to recipients of the report, they can put it in the report at the proper tab. Leave out tabs for those items which are not applicable. In assembling the report, place AF Form 711h on top of "tab A."

D. **MARKING REPORTS FOR OFFICIAL USE ONLY AND SPECIAL HANDLING.** Paragraph 4-10 tells how to mark limited-use and general-use reports.

E. **AF FORM 711 SERIES.** AF Form 711 series are the basic documents for formal safety reports. Most entries in AF Forms 711 are self-explanatory. However, within this and subsequent chapters they are given more explanation when needed. If reports involve more than one safety are, include AF Forms 711 for each. For example, if a missile mishap involves explosives, submit the missile form and the explosives form.

F. **EXHIBITS.** Additional documents may be used at the tabs listed on AF Form 711h. Each exhibit must serve a purpose. If it is included, it should be discussed in the analysis at tab T. Only those items which support the investigation, analysis, findings, and recommendations are sent with the formal report.

12-2. WHAT TO INCLUDE IN THE TWO-PART REPORT. The following describes the forms and other data normally needed and tells which tabs to place them under. Sometimes the circumstances of a mishap are such that certain normally required forms or exhibits would not add to the report. When this is the case, AFISC will consider a request to omit them. Requests should be submitted by message to HQ AFISC/SER.

A. PART I — FACTS:

(1) Tab A, AF Form 711, USAF Mishap Report, is sent on every full formal report. This does not apply to ground and aircraft nonflight mishaps reported only on AF Forms 711a (chapter 6).

(2) Tab B, AF Form 711a, Ground Mishap Report, is used for all ground and aircraft nonflight mishaps. If aircraft or missiles are involved, AF Form 711a should be placed at tab T.

(3) Tab C, AF Form 711b, Aircraft Flight Mishap Report, is submitted on Class A, B, and C flight mishaps (including manned or unmanned aircraft RPVs). One form is used for each aircraft involved.

(4) Tab D, AF Form 711c, Aircraft Maintenance and Materiel Report, is used for:

(a) Class A, B, and C flight mishaps (including manned or unmanned aircraft RPVs).

(b) Class A, B, and C aircraft nonflight mishaps when maintenance or materiel causes (including design deficiency) are assessed.

(5) Tab E, AF Form 711d, Missile or Space Vehicle Mishap Report, is submitted on:

(a) Class A and B missile/space systems mishaps.

(b) Class A, B, and C flight explosive, ground, or nuclear mishap when there is significant missile involvement.

(6) Tab F, AF Form 711e, Explosives Mishap Report, is submitted on:

(a) Class A and B explosives mishaps.

(b) Class A, B, and C aircraft nonflight mishaps when maintenance or materiel causes (including design deficiency) are assessed.

(c) Class A and B missile mishaps when explosives are involved.

(7) Tab G, Flight and Personnel Records include a copy of the Flight Record page showing the most recent flight time. The record should be closed out as of the date of the mishap. Include flight time in each aircraft flown. Break down information according to aircraft designation, inclusive dates flown, FP/IP time, and total time. (AFISC project officers can provide this information, if requested.) Also include training or personnel records if they relate to causes or recommendations.

(8) Tab H, AFTO Form 781 Series. Include AFTO Form 781, Aerospace Vehicle Flight Data Document (or proper missile maintenance form), if it adds to the report.

(9) Tab I, Materiel Deficiency Report. It is not necessary to in-

clude copies of all Category I MDRs. Include only those which have significant TDR results. However, provide a complete list of all the other MDRs that are not included. Identify each MDR by date-time group, report control number (RCN), name of part (NOM), and part number (MFR PN).

(10) Tab J, Technical and Engineering Evaluations of Materiel (Department of Defense). If a TDR or an engineering evaluation was done by DOD personnel, include it here. Normally, TDRs will not be finished in time to be put in the report by the field investigator(s). However, all available reports should be included at this tab. On-scene evaluations submitted by DOD personnel (such as AFLC, AFSC, and Directorate of Aerospace Safety) are also included at this tab. Technical and engineering evaluations prepared by civilian contractors who design, manufacture, or maintain equipment involved in a mishap are included at Tab W.

(11) Tab K, DD Form 175, Military Flight Plan (or Authorized Substitute Flight Plan Forms). Include a copy of the clearance form if it contributes meaningful information to the report. If weather factors played a role, also include a weather summary.

(12) Tab L, DD Form 365F, Weight and Balance Clearance Form F. Sometimes this document helps in the analysis of the mishap. If so, include a copy of the most recent DD Form 365F or weight and balance computations for the flight involved. NOTE: Weight and balance calculations done by the board for its investigations are not included here. These are part of the board's analysis and are placed in part II of the report.

(13) Tab M, Certificate of Damage. This lists the total damage to all Government property, materiel, and equipment. Include the maintenance officer's evaluation and statement of damage. It should be detailed and include the cost of parts replaced and the man-hours required for repair. (See paragraph 2-5 for determining estimated and actual man-hours for repair.)

(14) Tab N, Transcripts of Recorded Air-to-Ground/Aircraft-to-Aircraft Communications. These are written transcripts of recorded voice communications which bear on the analysis, findings, or recommendations. The transcript should begin early enough in the mishap sequence for a clear understanding of preceding events. Since these transcripts are factual data, they often provide a basis for information in the Factual Summary of circumstances. Intra cockpit communications are privileged and should not be referenced here but under Tab T, part II.

(15) Tab O, Any Additional Substantiating Data Reports. This is supporting data not otherwise defined. It includes local operating instructions, directives, approach and landing charts, flight data recorder data, and other forms.

(16) Tab P, Statement of Damage to Private Property. If private

property was damaged in the mishap, describe the damage at this tab. If the claims officer's damage statement is not yet available, the investigating officer includes his or her own statement of estimated damages.

(17) Tab Q, Orders Appointing Investigating Board. Include one copy of the orders appointing the board (or officer).

(18) Tab R, Diagrams (fallout, impact area, and so forth). Diagrams should be self-explanatory, indicating wreckage patterns, angle of impact, or association with structures, facilities, and so forth.

(19) Tab S, Photographs. Well defined 8X10 glossy photographs can help in analyzing the mishap. These are generally used to show damage, angles of impact, metal fractures, flight path, or vehicle travel. In some cases color photography is good for analysis, but do not use color if black and white will serve. Motion picture films and videotape are also a good source of information. These should be sent to the Directorate of Aerospace Safety as part of the report. Do not include photographs of deceased personnel in the mishap report. Pages on which photographs are placed are numbers (S-1, S-2, and so forth). Do not mark the photographs themselves. Place an index of photographs at tab S to aid reviewers. Neither the page captions nor comments in the index may refer to privileged information. Staged photographs that are part of the board's analysis are included at tab T near the related narrative. (Example: Pictures of models showing flight paths in a midair collision.) If it is impossible to describe a point of interest on a photograph in the caption, use circles or arrows on a transparent overlay. Only include photographs which aid in understanding the mishap and which are referred to in the analysis at tab T. However, all photographs taken by the board, except those staged for analysis, are held for use in the accident investigation.

B. PART II-BOARD OR INVESTIGATOR ANALYSIS:

(1) Tab T, Investigation, Analysis, Findings, and Recommendations. This is the most important part of the report. It draws on all portions of the report to provide a complete picture of what happened. This is followed by thorough analysis of all evidence, then findings, causes, and recommendations. This section records the opinions of the board. It should accept or reject all evidence in the report. Only in the case of a formal minority report should there be differing findings, causes, or recommendations. Chapter 3 deals with this portion of the report in more detail. (NOTE: For aircraft nonflight mishaps, place AF Form 711a at this tab.)

(2) Tab U, Statements and Testimony of Witnesses and Persons Involved. Statements should be taken from all individuals concerned with the mishap or who were eyewitnesses to it. (The locally reproduced statement format in figure 12-1 is used in formal limited-use reports.) If more than one statement is obtained from an individual, all should be included at this tab. The board may select for inclusion those statements and testimony that are meaningful. It is not always necessary to include all state-

ments. However, a complete list of all witnesses contacted is provided to the accident investigation. When an individual gives further testimony before the Board, that also is included at this tab. The statements and testimony of each individual are placed together in chronological order with the earliest on top. Their proximity makes it easier to compare the individual's impressions. All statements and testimony included at this tab must be considered in the analysis at tab T.

(3) Tab V, Rebuttals. When an Air Force individual is cited as causal in a mishap, he or she may rebut the conclusion. The individual submits either a statement of rebuttal or a statement declining rebuttal (figure 12-2). Refer to paragraph 12-13 for details. This does not apply to ground or explosives mishaps, unless they involve Air Force aircraft, missiles, or space systems.

(4) Tab W, Technical and Engineering Evaluations of Materiel (Contractors). Engineering evaluations.

(5) Tab X, AF Form 711f, Nuclear Accident/Incident Report, is submitted on:

- (a) Nuclear accidents and incidents.
- (b) Flight and missile mishaps in which nuclear material is also involved.

(6) Tab Y, AF Form 711gA and B, Life Sciences Report of an Individual Involved in an Air Force Accident/Incident. Submit these forms as explained in chapter 11.

(7) Tab Z, Board Proceedings. Use of this tab is optional. Investigation boards may use this tab to tell reviewing agencies about investigation problems and to make recommendations for improving reporting and investigating procedures. Comments on technical assistance which was coordinated through AFISC are also appropriate.

12-3. PREPARING AF FORM 711, USAF MISHAP REPORT. Fill out AF Form 711 on each flight, missile, space, nuclear, and explosives mishap requiring a full formal report. The form is placed in part I of the report at tab A. In most cases, the instructions on the form explain the required entries. The following instructions are for filling in blocks for which the instructions are not fully self-explanatory:

A. ITEM 2. Vehicle(s) or Materiel Involved. List the aircraft, missile, space system, nuclear weapon or system, automotive vehicle, ground equipment, explosives items, or any other item involved. Give model designation and serial number of aircraft, missile, or other item when it can be so identified. For an automotive vehicle, list type (PMV or GMV), make (Ford, Buick), and body style (2-door sedan, 1/2-ton pickup truck). If the report is on injuries only and no equipment is involved, enter "NA" in this block. If more than one vehicle or item of equipment is involved, list the one mainly responsible first, followed by the others.

B. ITEM 3. For Ground Accidents Only. Do not fill in. This item

pertains to ground mishaps. The AF Form 711 is no longer used for ground mishaps.

C. ITEM 4. Place of Occurrence, Distance and Direction From Nearest Town or nearest military airfield. Give distances in miles (indicate nautical mile(NM) or statute mile (SM), using points of the compass for direction[]). Also, give geographic coordinates (latitude and longitude). Give the location of the mishap and not the location where trouble first developed. For an on-base mishap, give the exact location (for example, bldg T-465, Aircraft Hanger, Luke AFB AZ).

D. ITEM 6. Day, Night Dawn, Dusk. Using the Air Almanac, consider dusk as beginning with official sunset and lasting 30 minutes. Dawn begins 30 minutes before sunrise and lasts until sunrise.

E. ITEM 7. Organization Possessing or Owning Vehicle or Materiel at Time of Mishap. Aircraft and missiles are possessed by the organizations which report them on the pertinent Air Force aircraft or missile report. In transferring aircraft and missiles, possession takes place as stated in paragraph 1-3.

(1) Enter the base at which the involved aircraft or missile is stationed. In addition to the name of the base, list the installation and location code as given in AFR 300-4, Vol III.

(2) Sometimes the structure of the organization possessing the equipment is not the same as the headings of the boxes in item 7. In this case, substitute proper units and organization.

(3) For ANG units which have been federalized, show the gaining command, subcommand, or numbered air force. Also show the applicable ANG air division, wing, group, and squadron. For ANG units which are not federalized, show the ANG organizations and indicate ANG as the major command.

F. ITEM 8. (List of organizations of second vehicle, if they differ from item 7 above.) More than one vehicle or item of equipment may be involved. If the organization possessing the second vehicle is different from item 7, list it here. This item is also used if an aircraft is possessed by one organization but the flying hours are reported by another. In this case, cross out the parenthetical note in this item.

[THE REGULATION DOES NOT HAVE AN ITEM 9. EDS.]

G. ITEM 10. List of Personnel Directly Involved. List the information for each military person or civilian employee in the Federal Service involved in the mishap. Also include all persons injured on the ground as a result of the mishap. List the operator or person most directly involved first. Army and Navy personnel assigned to the Air Force are shown as Army or Navy. Identify civilian employees by their employment agency or department (for example, Civ-USAF, Civ-Army, Civ-FAA, and so forth). For missile mishaps, list only those persons directly connected with the mishap, such as project director, guidance technician, or mission controller.

(1) Assigned Duty. Use abbreviation of duty title. For crewmembers in flight mishaps use the duty symbol shown on AFTO Form 781.

(2) Aero Rating. Use abbreviations as in AFR 35-13.

(3) Days Lost on TT Only. Refer to paragraph 2-1f(3) for definition of lost workday. If lost workdays will continue after the report is sent in, use an estimate of the total.

H. ITEM 11. Factual Summary of Circumstances. This summary of the mishap may be disclosed under the Freedom of Information Act. Therefore, there are two main considerations for completing this item. First, the summary should be completely factual. It should not draw on privileged sources. These sources include witness statements; technical evaluations by contractors; and the board's investigation, analysis, conclusions, findings, and recommendations. Also, avoid drawing on any information in part II of the report which is not also shown in the exhibits in part I. The second consideration is that the Factual Summary of Circumstances must lead the reader through the sequence of events involved in the mishap. Meeting both these goals is sometimes a difficult task. The following guidance will assist investigators in completing this item:

(1) The Factual Summary of Circumstances is presented in sequence. Start with the earliest related point and continue until the time of the occurrence.

(2) The reader should be able to form a general picture of the mishap without reference to the attachments. The facts, conditions, and circumstances are recorded just as they were discovered by the investigators.

(3) The reader should know how the mishap occurred, not why it happened. The importance of facts, or how they relate to investigative conclusions, should not be discussed.

(4) Factual evidence is taken from exhibits in part I of the report. Do not refer to information in part II.

(5) Writing style is important. Many requests under the Freedom of Information Act are made for an account of the mishap, but not for the report itself. In these cases, only the Factual Summary of Circumstances is released. Therefore, as complete a factual summary as possible should be provided.

(6) In rare cases, there is not enough factual information available for an understandable summary. When this is the case, certain information given by witnesses may add to the narrative without implying investigative conclusions. If it is absolutely necessary to use this information, the following instructions apply:

(a) Style the narrative so that the information is not attributed to any individual.

(b) Advise the witness whose statement provided the information and allow the individual to review the summary and approve its release.

Attach a signed statement approving the release to the letter of transmittal to the Directorate of Aerospace Safety.

12-4. PREPARING AF FORM 711A GROUND MISHAP REPORT. See Chapter 6.

12-5. PREPARING AF FORM 711B, AIRCRAFT FLIGHT MISHAP REPORT. Most of the items in the form are self-explanatory. Remember that this form is placed in part I of the report. Do not include information learned solely from confidential sources (witness statements or inputs from contractors). Only include information which can be supported by other factual data in part I. The following paragraphs tell how to fill out parts of the form that are not self-explanatory:

A. ITEM 1. Mishap Class. Mark the appropriate mishap class. If the aircraft is destroyed, mark both "A" and "DEST."

B. ITEM 2. Aircraft MDS and Serial Number. Give complete information on mission, design, and series (MDS), as well as block number and prefixes if they apply.

C. ITEM 3. Date. Enter the date of the mishap. Use six digits to express the year, month, and day (76-01-14). If the exact date of the mishap must be estimated, indicate by writing "(EST)" after the date.

D. ITEM 4. Unit Control Number. This is the unit report number required in paragraph 4-7b(1)(e). Example: 25 FTW-1.

E. ITEM 6. Operator at controls:

(1) The operator means the pilot who was at the controls at the time the mishap occurred.

(2) Component is one of the following:

(a) Reg AF. Member of the regular Air Force.

(b) AFRES. Member of the US Air Force Reserve while in the active military service.

(c) ANGUS[.] Member of the Air National Guard of the US while in active military service.

(d) RIN. Member of the US Air Force Reserve not on active duty (including inactive personnel on temporary training duty).

(e) ANG. Member of the Air National Guard of the US while not in active military service.

(f) RAF, USN, civ, and so forth, as applicable.

(3) Pilots may be assigned to one organization for duty, but attached to another for flying. If so, fill out the blocks for both "assigned organization" and "attached organization for flying."

F. ITEM 10. Clearance From — To:—. State the place where the flight originated, and the destination to which it was cleared. Also indicate the type of clearance (there may be more than one type; example: VFR and LOCAL, or IFR and AIRWAYS).

G. ITEM 12. Type of Mission. Use the mission symbol for the mishap flight, as given on AFTO Form 781.

H. ITEM 13. Altitude/Elevation. This is the altitude or elevation where the mishap happened. Express flight altitude as MSL or FL. Also indicate altitude above ground level (AGL). If the mishap occurred as a result of collision with the ground (excluding collisions preceded by stalls, spins, spirals, explosions, or airframe failures), indicate terrain elevation.

I. ITEM 14. Phase of Operation. Select only one of the following phases of operation:

- (1) Engines running, not taxiing.
- (2) Taxiing:
 - (a) To takeoff.
 - (b) From landing.
- (3) Takeoff:
 - (a) Roll.
 - (b) Initial climb (within 5 miles of airport).
 - (c) Discontinued (including all attempts to stop the takeoff run or climb by reducing power, using brakes, or other methods of slowing or stopping).
- (4) In Flight:
 - (a) Normal.
 - (b) Acrobatics (including intentional maneuvers resulting in abrupt changes in speed, direction, or altitude).
 - (c) Climb (to cruise altitude, change of altitude, and so forth).
 - (d) Refueling.
 - (e) Air-to-ground gunnery, rocketry, or bombing.
 - (f) Air-to-air gunnery or rocketry.
 - (g) Low-level flight (prolonged, according to directed mission requirements; this does not mean "buzzing" or confirmed violations of AFR 60-16).
 - (h) Descent (prolonged, such as jet penetration, letdown, and so forth).
 - (i) Aerial delivery of personnel or equipment.
 - (j) Other.
- (5) Landing:
 - (a) Approach (all legs in landing pattern, GCA and ILS included).
 - (b) Flare and touchdown.
 - (c) Roll (ends when pilot adds power for touch-and-go or go-around, or when the aircraft slows to taxi speed to turn off the runway).
 - (d) Other.
- (6) Go-around (ends when power can be reduced and the aircraft can maneuver freely):
 - (a) Premeditated (including touch-and-go).

(b) Unpremeditated (originally intended to make full-stop landing).

(7) Ground mishap (no intent for flight):

(a) Parked.

(b) Towed.

(c) Taxiing.

J. ITEM 15. Type of mishap. Types of mishaps are:

(1) Hard Landing. Stalling in or flying into runway or other intended landing space while landing.

(2) Collapse or Retraction of Landing Gear. All of these occur on the ground, except those cases defined as wheels-up landings.

(3) Undershoot. Landing short of runway or other intended landing space.

(4) Overshot. Landing too fast or too far down the runway.

(5) Collision With Other Aircraft.

(6) Collision With Ground or Water. Excludes collisions preceded by stalls, spins, spirals, explosions, or airframe failures.

(7) Other Collisions. Collisions with any objects other than ground, water, or other aircraft; excludes collisions preceded by stalls, spins, spirals, explosions, or airframe failures.

(8) Spin or Stall. Includes all mishaps where the aircraft spins or stalls into the ground or water; excludes hard landings, stalls that occur above the landing space while leveling off, airframe failures, midair collisions, and explosions.

(9) Fire or Explosion on Ground. All mishaps resulting from fire or explosion on the ground.

(10) Fire or Explosion in Flight. All mishaps resulting from fire or explosion in the air.

(11) Airframe Failure. All mishaps resulting from failure of any part of the airframe, such as wing spars, empennage, hinges, and fuselage skin, even though the aircraft lands safely without further damage. This also includes inflight equipment losses that are not caused by the action or inaction of personnel.

(12) Abandoned Aircraft. All personnel capable of piloting an aircraft abandon it in flight; excludes spins or stalls, fire or explosion in the air, airframe failure, and collisions.

(13) Propeller or Jet Blast. Injury or property damage resulting from contact with propellers or from propeller or jet blast.

(14) Equipment Loss in Flight. Mishaps where aircraft equipment, such as canopies, hatches, or tip tanks, are jettisoned or detached from the aircraft. This is limited to jettisons caused by the actions of persons in the aircraft or by maintenance malpractice, whether intentional or not.

K. ITEM 17. Airfield Data. "Distance of touchdown from runway"

means distance from the approach end of the runway to the first touch-down point.

12-6. PREPARING AF FORM 711C, AIRCRAFT MAINTENANCE AND MATERIEL REPORT. This form is self-explanatory. Refer to paragraph 2-5 in determining man-hour and cost entries.

12-7. PREPARING AF FORM 711D, MISSILE OR SPACE VEHICLE MISHAP REPORT. See chapter 7 or chapter 9 respectively.

12-8. PREPARING AF FORM 711E, EXPLOSIVE MISHAP REPORT. See chapter 8.

12-9. PREPARING AF FORM 711F, NUCLEAR ACCIDENT/INCIDENT REPORT. See chapter 10.

12-10. PREPARING AF FORM 711GA, LIFE SCIENCES REPORT. See chapter 11.

12-11. PREPARING AF FORM 711GB, LIFE SCIENCES REPORT, ON NUCLEAR ACCIDENTS OR INCIDENTS. See chapter 10.

12-12. WRITING THE NARRATIVE REPORT. This section is designed to help in writing the narrative portion (part II, tab T) of a formal report. These principles also apply to final progress message reports. The Factual Summary of Circumstances (part I, tab A) explains how the mishap occurred. The narrative explains why it happened.

A. CONTENTS OF THE NARRATIVE REPORT. The narrative has three major topics: Investigation/Analysis, Findings, and Recommendations. The investigator may include a fourth major topic, History of Flight, if the Factual Summary or Circumstances in part I needs amplifying. The narrative must clearly show the scope of the investigation (what evidence was examined?) and analyze the evidence presented (what conclusions did the evidence lead to, and why?). The narrative points out which evidence is most worthy of belief. It also explains why certain possibilities are eliminated, while others are retained.

B. IDENTIFYING INVOLVED PERSONNEL. In general, the narrative should not identify involved personnel by name or call sign. Instead, use such devices as "the mishap aircraft," "the flight leader," "vehicle number 1," or "the crane operator."

C. REFERRING TO EXHIBITS. When the report includes supporting documents, the narrative should refer to the tabs and page numbers of the exhibits. Supporting documents include records, photos, statements, technical reports, and the like. This permits merely summarizing the evidence in the narrative. It eliminates the need to repeat material word for word from other parts of the report.

D. FINDINGS, CAUSES, AND RECOMMENDATIONS. The most important part of mishap investigation is developing findings, causes, and recommendations. The goal is to decide on the best preventive actions to preclude mishap recurrence. To accomplish this purpose, the investigator(s) must list the significant events and circumstances of the mishap sequence (findings). Then they must select from among these the events

and conditions that were causal (causes). Finally, they suggest courses of action to prevent recurrence (recommendations).

12-13. NOTIFYING PERSONS FOUND RESPONSIBLE FOR AN AIRCRAFT, MISSILE, OR NUCLEAR MISHAP. Use the following procedures for formal reports, for message reports see paragraph 12-13b:

a. Military and Civilian Personnel Under Air Force Jurisdiction. When an Air Force person is named as a cause of one of these mishaps, he or she should have a chance to rebut the report. This applies to all reports, indorsement by reviewing commanders, and the HQ USAF/IGD letter of final evaluation. Ask the involved individual to submit a statement of rebuttal or a statement declining rebuttal. (See figure 12-2 for suggested format.) The person must be advised that paragraph 3-5d applies to the statement of rebuttal and that the statement becomes an attachment to the mishap report. If the person found responsible is:

(1) Attached or assigned to the organization that had the mishap, the investigator(s) offers the person a chance to submit a rebuttal statement. Convening authorities forward rebuttal statements to all report addresses within 30 days of completion of the formal report if the statements were not included in the basis report. The command review process, including the HQ USAF/IGD letter of final evaluation, will not be delayed for rebuttals that are not received within 30 days.

(2) Attached or assigned to another major command, the investigator(s) sends a copy of the report to the person's immediate commander. Attach a letter asking that commander to:

(a) Notify and give the person a chance to review the report.

(b) Get the rebuttal statement and send it to the convening authority for the investigation.

(c) Send one copy of the rebuttal statement with the report through channels to the major commander. The major commander detaches the report and indorses the rebuttal statement to the Director of Aerospace Safety or Nuclear Surety. State any additional preventive action which has been taken.

(3) Named as a cause during the review process, the investigating major commander makes sure the member is informed of this action using procedures in (2) above.

(4) Physically or mentally incapacitated at the time of investigation, the commander notifies the individuals as soon as possible. Make sure the person has the chance to review and submit the rebuttal statement.

b. Persons found causal in mishaps reported by message have an opportunity to rebut the report. They do this by reviewing the report and writing a letter of rebuttal to their commander within 30 days. The commander considers the information presented in the rebuttal and, if warranted, issues a supplemental report.

c. Non-Air Force Military Personnel and Civilians Outside Air Force Jurisdiction. The investigator(s) does not offer non-Air Force personnel the chance to review the report and submit a rebuttal statement.

12-14. OTHER FINDINGS AND RECOMMENDATIONS OF SIGNIFICANCE. Findings developed during the investigation, but which are not a part of the mishap sequence, should not be included. They should be attached to the letter of transmittal forwarding the report to the convening authority. A copy may also be attached to the letter of transmittal of the report routed through command channels for review. These nonrelated findings may cover a wide variety of subjects. Their use, content, and format are left to the board president. These findings are not part of the mishap report. Recommendations which are not related to the causes of the mishap or the fatal/major/minor injuries are included in this letter. Any needed action must be taken by separate correspondence from the convening or other command authority.

12-15. MINORITY REPORTS. When one or more board members disagree with the board president's findings or recommendations, they submit a minority report. The minority report should state the reason(s) for disagreeing with the majority and must include the minority findings and causes. Recommendations, if different than those contained in the majority report, are also listed. All dissenting members sign the minority report. It is placed in the report immediately after the authentication page. List minority reports in the "Remarks" section of AF Form 711h. The findings and causes of the board president are the majority findings of the board, regardless of the numerical majority. Findings and causes which differ from those of the board president, therefore, are always the "minority report."

12-16. AUTHENTICATION. Type each voting board member's name, grade, and position on the last page of this section. Have each applicable person sign above it for authentication of the report. For those mishaps investigated and reported by a single investigating officer, only name, grade, and signature need appear.

12-17. FORWARDING FORMAL REPORTS. Send the report to the addressees listed in tables 12-1, 12-2, 12-3, 12-4, or 12-5 within the assigned deadline.

A. HOW TO FORWARD THE REPORT:

(1) Send one copy of an aircraft, missile, space, or explosives safety report to the Director of Aerospace Safety. Send nuclear mishap reports to the Director of Nuclear Surety. Use a letter of transmittal to forward the report.

(2) Send one copy (original if carbons are used) of Class A and B on-duty ground mishap reports to the Director of Aerospace Safety. Use a letter of transmittal to forward the report.

(3) Send one copy (original if carbons are used) of a off-duty ground mishap report (AF Form 711a) through the major command to

the Director of Aerospace Safety. A transmittal letter is not required. Use the same procedure for the Class C on-duty ground and aircraft non-flight mishap reports (AF Forms 711a and 711b). Commands may supplement this regulation to allow these reports to be sent through numbered air forces. However, the deadline to the Director of Aerospace Safety is 30 days from the time of the mishap.

B. LETTERS OF TRANSMITTAL:

(1) The letters of transmittal must list all addressees receiving copies of (or extracts or attachments from) the report. All copies of limited-use reports are numbered and accounted for through distribution. Do this by listing in the "TO" element of the letter of transmittal, each addressee to include office symbol by copy number. Example: HQ MAC/IGF Scott AFB IL, copy 1 of 20.

(2) The last paragraph of the letter of transmittal, signed by the board president, will contain a statement certifying that the number of copies listed are the only copies of the report produced by the safety board.

C. LIMITATIONS ON DISTRIBUTION OF A LIMITED-USE REPORT. A limited-use report is distributed within the Air Force on a "need to know" basis. Providing copies or extracts to agencies outside the Air Force is prohibited. Distribution within the Air Force is as shown in tables 12-1, 12-2, 12-3, 12-4, and 12-5. Do not produce extra copies except in the following circumstances:

(1) Major commands may require additional copies to be sent to command headquarters to aid in staffing the report. After the command indorsement has been sent, all but the file must be destroyed.

(2) In certain cases, action may be required of an Air Force agency which is not shown in the distribution tables. All agencies or organizations tasked in the recommendations must receive copies of the formal report. Coordinate this requirement with HQ AFISC/SEP by message or telephone (AUTOVON 876-2244) prior to forwarding any additional copy. (See paragraph 13-6b.)

(3) If an Air Staff office is the action agency for a validated recommendation, AFISC prepares the required correspondence. (See paragraph 13-6b.)

(4) Extra copies of reports may be required by paragraph 3-2 or requested by the Director of Aerospace Safety or Nuclear Surety. These are sent to those directors, who will then provide them to the proper agency(s). (See paragraph 13-6b.)

(5) Producing informational only copies of formal reports is prohibited.

(6) The board president may retain a complete copy of the formal report (for briefing purposes) for 60 days. This copy will be listed on the letter of transmittal and returned to the MAJCOM safety office for disposition.

APPENDIX "B"
AIR FORCE REGULATION 110-14
JUDGE ADVOCATE GENERAL
INVESTIGATIONS OF AIRCRAFT AND
MISSILE ACCIDENTS

1. TERMS EXPLAINED:

A. ACCIDENT INVESTIGATION. An officer's or board's investigation of an aircraft or missile accident conducted under this regulation.

B. ACCIDENT REPORT. A record containing evidence gathered by an accident investigation conducted under this regulation. The formal title is "Aircraft (or Missile) Accident Investigation Report."

C. SAFETY MISHAP INVESTIGATION. An officer's or board's investigation of an aircraft, missile, nuclear, or space mishap conducted under AFR 127-4.

D. SAFETY MISHAP REPORT. A record containing findings, conclusions, and evidence gathered by an aircraft, missile, nuclear, or space safety investigation conducted under AFR 127-4. The formal title is "USAF Safety Mishap Report."

2. POLICY ON AIRCRAFT AND MISSILE ACCIDENT INVESTIGATIONS:

a. The Air Force investigates these accidents primarily to:

(1) Find out their probable and contributing causes for accident prevention.

(2) Obtain and preserve available evidence for claims, litigation, disciplinary and administrative actions, and for all other purposes.

b. The Air Force meets these goals by doing two separate investigations of the same accident:

(1) Safety Mishap Investigation. The sole purpose of this investigation is mishap prevention. Its success depends on candid statements and observations of personnel involved in the mishap. To obtain full disclosure, safety investigators promise witnesses their testimony will be used only for mishap prevention. This promise of confidentiality enables safety investigators to learn what witnesses know about the mishap even though their testimony may be incriminating or against their personal interests.

(a) The Air Force asserts governmental privilege to protect the following information from release outside command and safety channels: witness testimony and inputs from contractors received under a promise of confidentiality; the safety investigators' opinions, deliberations, and communications; life science reports; and other non-factual portions of Part II of the safety mishap report.

(b) The Air Force does not assert the privilege to protect factual information in Part I of the safety mishap report.

(2) Accident Investigation. This investigation is not intended to determine cause; rather it serves claims, litigation, disciplinary, and administrative needs. For these reasons a thorough accident investigation

and quality accident report are important to the Air Force mission. An accident report is not privileged and is releasable to anyone upon request and payment of applicable fees.

3. RELATIONSHIP BETWEEN A SAFETY MISHAP INVESTIGATION AND AN ACCIDENT INVESTIGATION:

a. These investigations are conducted completely apart from each other. A safety investigation takes priority over the accident investigation in interviewing witnesses, obtaining and analyzing evidence, and inspecting the scene of the accident. An accident investigation is conducted at the same time only if it does not interfere with the safety investigation. For these reasons do not:

(1) Assign members of the safety investigation board to participate in an accident investigation of the same mishap.

(2) Permit accident investigators to attend the safety investigation proceedings.

(3) Appoint officers currently assigned and performing safety duties to conduct an accident investigation. They may, as witnesses, provide non-privileged information to accident investigators but cannot help conduct such an investigation.

(4) Allow accident investigators to review, use, or compare in whole or in part the written or recorded testimony given to safety investigators.

(5) Permit witnesses who appeared before safety investigators to:

(a) Reveal their testimony, opinions, analyses, speculations, or recommendations given to the safety investigators. Witnesses may provide the same factual information in both investigations so long as the accident investigators obtain the information through independent questioning and not be asking witnesses to tell them what they told the safety investigators.

(b) Disclose testimony, findings, recommendations, or cause factors included in the safety report.

NOTE: These restrictions apply to any person with access to privileged safety material who may be called as a witness before any other proceeding, civilian or military.

b. Inform all witnesses in an accident investigation of its nature and of the possible use of their testimony in adverse actions, litigation, and claims. Ensure they are fully aware of the difference between the two investigations. See attachment 3 for sample advice.

4. WHO IS RESPONSIBLE FOR AN ACCIDENT INVESTIGATION:

a. The major command (MAJCOM) commander or signee who convenes the safety investigation under AFR 127-4.

(1) Convenes an accident investigation and directs when it is to begin.

(2) Ascertains whether the investigation meets the requirements of

all commands or components concerned when aircraft or personnel form more than one MAJCOM or component of the Air Force are involved.

(3) Contacts the other military service or services when personnel or aircraft from two or more are involved, and determines if a joint investigation is feasible.

(4) Requests, if desired, a MAJCOM commander with a unit nearer the location of the accident to direct an accident investigation.

(5) Provides a copy of the completed and approved report to the Chief, National Guard Bureau, in cases involving ANG aircraft or personnel.

b. The Chief, National Guard Bureau, state adjutant general concerned, or their designees:

(1) Convene the accident investigation when the accident involves ANG aircraft, except when aircraft from another Air Force component also are involved.

(2) Ensure the accident investigation is conducted according to this regulation.

(3) Provide a copy of the completed and approved accident report to the gaining MAJCOM.

5. WHEN TO CONDUCT AN ACCIDENT INVESTIGATION. An accident investigations is:

a. Required when it is reasonably clear from the circumstances involved that:

(1) Claims against the US Government will exceed \$50,000;

(2) Litigation against the US or any third party, including present and former government contractors, is anticipated; or

(3) The accident has caused or is likely to cause a fatal or permanently disabling injury to any person.

b. Discretionary when the convening authority desires it.

6. HOW TO CONDUCT AN ACCIDENT INVESTIGATION. A board of three or more officers or single officer may conduct the investigation.

a. Use paragraph 8 of this regulation and the guidelines of AFR 120-4.

b. Prepare reports according to attachment 5.

7. WHO CONDUCTS AN ACCIDENT INVESTIGATION. Accident investigators must be from an organization other than the one to which the aircraft, missile, or crew members are assigned. Appoint only experienced, qualified officers, preferably senior in grade to persons who may be subject to disciplinary actions or adverse administrative proceedings. They normally should possess the following qualifications:

A. AIRCRAFT ACCIDENTS - a rated officer who is or has been recently qualified in the aircraft involved.

B. MISSILE ACCIDENTS - an experienced missile officer who has knowledge or experience in the missile system involved.

C. BOARD OF OFFICERS - at least one member with the qualifications of a or b above, and another with recent operations or maintenance experience.

8. ACCIDENT INVESTIGATION PROCEDURES:

a. Accident investigators:

- (1) Follow the checklist in attachment 1.
- (2) Obtain relevant documentary evidence, including autopsy protocols, X-rays and toxicology reports, if applicable (attachment 1). Accident investigators must obtain all material, regardless of its apparent triviality or redundancy, and review it for possible inclusion in the accident report.

(3) Prepare a factual summary but do not make conclusions or recommendations (attachement 5).

b. Presidents of safety investigation boards:

- (1) provide accident investigators with:
 - (a) All nonprivileged material gathered by the safety investigators including, but not limited to, the information in Part I of the safety report.

(b) A list of all witnesses who testified or provided statements to the safety investigators.

(c) Negatives or copies of all nonprivileged photographs, aircraft videocassette recordings, and medical and personnel records.

(d) Notification of when the wreckage is released to them.

(2) Do not release:

(a) Witness statements or testimony provided to safety investigators.

(b) Data, reports, or studies manufacturers provided to the safety investigators under a promise of confidentiality.

(c) Safety investigation proceedings, findings, conclusions, opinions, or recommendations.

(d) Life Sciences Reports.

(e) Cockpit Voice Recordings.

c. Accident investigation witnesses:

(1) May not testify in accident investigations until they have been released by the safety investigators.

(2) Are interviewed as soon as they are released by the safety investigators.

(3) Are advised of their rights against self-incrimination if suspected of a criminal offense (attachment 3).

(4) Must appear when called and testify under oath or affirmation if they are members or employees of the US Air Force, unless they assert the privilege against self-incrimination.

d. Commanders make technical advisors available to accident investi-

gators (for example, maintenance, personnel, medical, legal, etc.). Advisors perform duties as directed by investigators and need not be appointed on orders.

9. PREPARING AND DISTRIBUTING ACCIDENT INVESTIGATION REPORTS:

a. The investigating officer or board:

(1) Completes accident reports within 30 days from the date the accident investigation is begun, unless the appointing authority grants an extension for good cause.

(2) Prepares a summary of facts.

(3) Compiles and assembles the report on letter size paper as outlined in attachment 2.

(4) Includes the originals of all documents related to the accident, including relevant historical maintenance records of the aircraft or missile involved, except when:

(a) The originating agency retains them, such as personnel for flight records. In these cases use certified copies and state in the report why the originals are not included.

(b) The Air Force Communications Command custodian secures and retains originals of tape recordings of air traffic control or other radio communications according to AFR 60-5. Include a certified transcript of any such communications in the accident report.

(5) Sends all copies of the report and all evidence not included in the report to the supporting staff judge advocate (SJA).

b. The Supporting SJA:

(1) Reviews the report for legal sufficiency.

(2) Sends the original and three copies of the report and legal review to appointing authority's SJA.

c. The SJA, at the direction of appointing authority:

(1) Upon receipt of the report:

(a) Coordinates it with appropriate staff agencies (for example, Director of Operations and Director of Maintenance).

(b) Reviews it for legal sufficiency.

(c) Submits it and staff comments to the appointing authority. (Do not incorporate staff comments into the accident report).

(2) After the appointing authority's review and action:

(a) Retains the original report.

(b) Sends one copy of the report to any MAJCOM involved.

(c) Sends two copies of the report to the responsible claims officer if claims are anticipated.

(d) Sends one copy of the summary of facts only to HQ USAF/JACC.

d. The appointing authority reviews the report and determines the appropriate action.

e. This accident investigation report is exempt from report control procedures under the provisions of AFR 178-7, paragraph 1-7a(4).

10. DISPOSITION OF WRECKAGE AND OTHER EVIDENTIARY MATERIALS. The supporting SJA:

a. Ensures the wreckage is retained and preserved as required and coordinates with the appointing authority's SJA and HQ USAF/JACC before releasing it for disposal.

b. Coordinates requests for disposal of wreckage by letter, message, or telephone and includes the following information:

- (1) Date and time of accident.
- (2) Type of aircraft or missile involved.
- (3) Location of accident.
- (4) Details and status of persons killed or injured.
- (5) Short factual summary of the accident, including a list of any parts that may be relevant to claims and litigation.
- (6) Estimate of the number and types of claims anticipated.

c. Disposes of evidence not included in the report after the appointing authority approves the report unless:

- (1) There is litigation (contact HQ USAF/JACC to determine if this applies).
- (2) Source agency requires its return.
- (3) Other directives require its retention.

d. Indexes and retains the evidence not included in the report if there is litigation until it is completed; ensures evidence does not contain privileged safety information; and sends a copy of the index to the appointing authority's SJA.

11. RELEASE OF RECORDS. The disclosure authority for accident reports is the MAJCOM SJA or designee. The disclosure authority for ANG accident reports is the Chief, National Guard Bureau or designee. Process requests for copies of the report as follows:

a. Provide copies free of charge to family members of individuals killed in the accident.

b. Apply the fees specified in AFR 12-30 for requests made under the Freedom of Information Act.

c. Apply the fees specified in AFR 12-32 for all other requests.

* * *

Comments

